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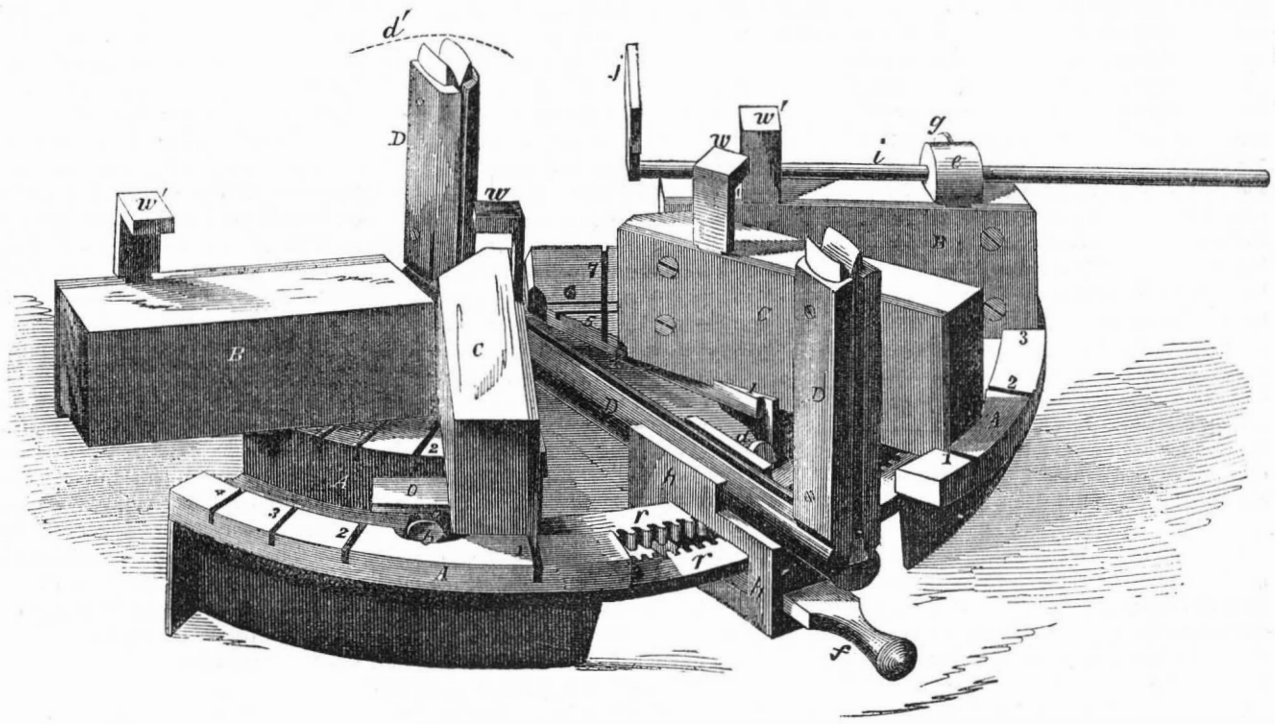
SPEAR'S PATENT MITER BOX.



Improvement in Miter Boxes.

The annexed engraving is a perspective view of a new miter box, for which a patent was granted to Matthew Spears, on the 16th of May last year.

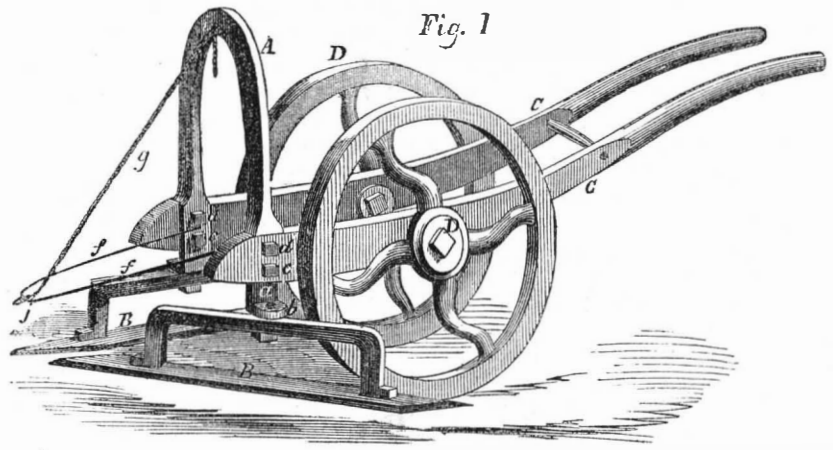
A A are two supporters of a quadrant form with a number of grooves or slots in their faces, running at different angles to receive the flanges of the rests. These two supporters are like wings, and can be drawn closer together or further apart, for their work; B B and C C are four rests. Their bottom flanges fit into the grooves 1, 2, 3, 4, 5, 6, 7, inclusive, in each supporter, A. The wedges, *w' w' w w*, with clamp heads, pass down through an opening in each rest, and fasten them in the grooves of the supporters. D D D represent the saw guide; it can swing to each side, as shown, by the dotted line, *d'*, to allow of a bevel edge being cut on stuff. The thumb screw, *d*, binds the axis of the saw guide in its box, *h h*. The supports have two thin metal racks, *r r*, connected to them by set screws in a countersunk channel. They are are curved and run under the box, *h h*, of the axis of the saw guide, where there is a small pinion between the racks, which separates them and allows them to be moved from side to side. The wedge *f*, is for binding them. Each support or stuff platform, A, is capable of being moved out like a wing, to expand or contract the box for the working of different stuffs. The rod, *i*, running through an eye on the top of one of the rests can be fixed in by the set screw, *g*, or taken out at pleasure. It is a gauge measure to cut stuff to any length, and used in the machine with that rest. The stuff to be mitered is laid between the rests and against them on the face of supports. If there was a piece of stuff shown in the box to be mitered, it would cover the axis, D, of the saw guide, and lie on it. All the rests are not always required in the miter box, as now shown, but sometimes they are all used according to the work to be done. The rests, B B, are placed in the slots, 1, 1, for sawing smaller angles than the edges of the supporters, A A, make with one another when closed. Slots 2, 2 and 7, 7 are used with the rests in mitering for an angle, and its supplement, without altering the machine, only once setting. Slots 3, 3, are used in mitering wide or large lumber by opening out the supports wide to a straight line, and tipping the saw guide down till it touches one of the supports. Slots 4, 4, are used when the machine is closed to miter for a right angle. Slots 5, 5, are used in cutting stuff to any angle to which the machine is set. Slots 6, 6, are used when the machine is closed for sawing lumber for a right angle or square.

This miter box miters for any angle, and its supplement, by once setting; it also miters and cuts for a right angle, and cuts to any angle to which it is set. It miters to a right angle with the plane surface of the machine. It can saw a felly or any circular stuff at a straight line from the outer edge to the center of the same circle. It can be set rapidly to miter to any angle. The rests, it will be understood, fit into all the grooves and are shifted from one to the other, for the mitering of any kind of stuff. In this figure all the rests are placed on the supports. It will be understood that the one support, A, is just a duplicate of the other, and that they swing or turn on an axis, the cap of which supports the extreme end of the saw guide, D, below *d'*, so that the supports spread out from that axis which is the center of the circle, described by the edge of the supports. It is not possible to describe all its uses, that is, how to miter all the different kinds of work which it is capable of performing, by reference to the figure, as the positions of the rests and supports admit of so many changes; but the joiner will obtain a correct idea of the nature and construction of the machine, and its adaptability, from the engraving and description.

More information may be obtained by letter addressed to J. W. Robinson, Concord, N. H., who is sole agent for the United States, and who manufactures and keeps them for sale. One of these machines may be seen in this office.

ROBINSON'S HAND CULTIVATOR.

Fig. 1



The accompanying engraving is a perspective view of an improved cultivator, designed for garden or field cultivation, and particularly adapted to drill sown wheat and other small grains. The patentee is Jonathan A. Robinson, of Fremont, N. H.; it was patented on the 20th of last February. The machine or implement consists of cutters attached to the two ends of a yoke of such hight as to pass over the tops of the plants, the knives being adjusted to run as near the plants as may be desired, and the whole being made to travel on wheels.

A is a yoke or bow, to the lower ends of which are secured the cutters, B B, each being allowed to swivel around the point, *a*, the nut, *b*, serving to hold them secure when placed in the required position. By this method of adjusting the cutters, they are made to cut more or less distant from the rows of plants.

C C are the handles for guiding the machine. They carry short shafts, D, on which are the wheels; *c c* are square headed pins which pass through the lower ends of the handles, and screws into the end of the yoke bow, which allows the bow a limited motion to make the cutters dip more or less beneath the surface; *a* shows another square headed pin which passes through a slot in the butt of the handle (one for each handle,) and also screws into the yoke, A, the length of its slot. The yoke is by these pins set in position for the purpose of adjusting the dip of the cutters. By tightening this screw the cutters are held in place.

A device is employed to make each cutter move at an equal distance from the row of grain, or whatever it may be; *j* is the guide point, it is held over the center of the space between the points of the cutters by a bent wire, *f f*, which is attached to each arm of the yoke, and is supported by a chain, *g*, from the apex, *i*, of the yoke, A. The machine is used by wheeling it forward like a barrow, the guide point, *j*, being kept at the exact distance from the row. It will be observed that as the cutters can be set and adjusted to any distance to and from the plants, the weeds and grass can be cut up very near the rows.

Mr. Robinson informs us that he has hoed small carrots with this machine, the points of the cutters being 1¼ inches apart, and he walked right along, hoeing them perfectly. As the cutters are adjusted to cut a little more than half way to the adjoining row, the work is done thoroughly, no unhoed space being left between the rows. The cutters being set at an acute angle, they cut the weeds easily. They can also be adjusted to take the earth away from, or carry it up to the rows.

More information may be obtained by letter addressed to the patentee and manufacturer, at Fremont, N. H.

Baking Ham.

Most people boil ham. It is much better baked, if baked right. Soak it for an hour in clean water and wipe it dry, next spread it all over with thin batter, and then put it into a deep dish with sticks under it, to keep it out of the gravy. When it is fully done, take off the skin and matter crusted upon the flesh side, and set it away to cool. You will find it very delicious, but too rich for dyspeptics.—[Exchange.

The King of Prussia has ordered a great Medal for Science, and a golden Cosmo Medal, to be presented to Lieutenant Maury, for the Wind and Current Charts.

Atlantic Telegraph.

The Halifax papers assert that the money has been subscribed in London to construct a line of submarine telegraph between some part of the British possessions in America and Ireland.

Bad Place for Doctors.

The Grand Jury of Orange county, Fla., in their general presentment, made at the late term of their court, mentioned the fact, that out of a population of four hundred in the county, there has not been a single death in twelve months.

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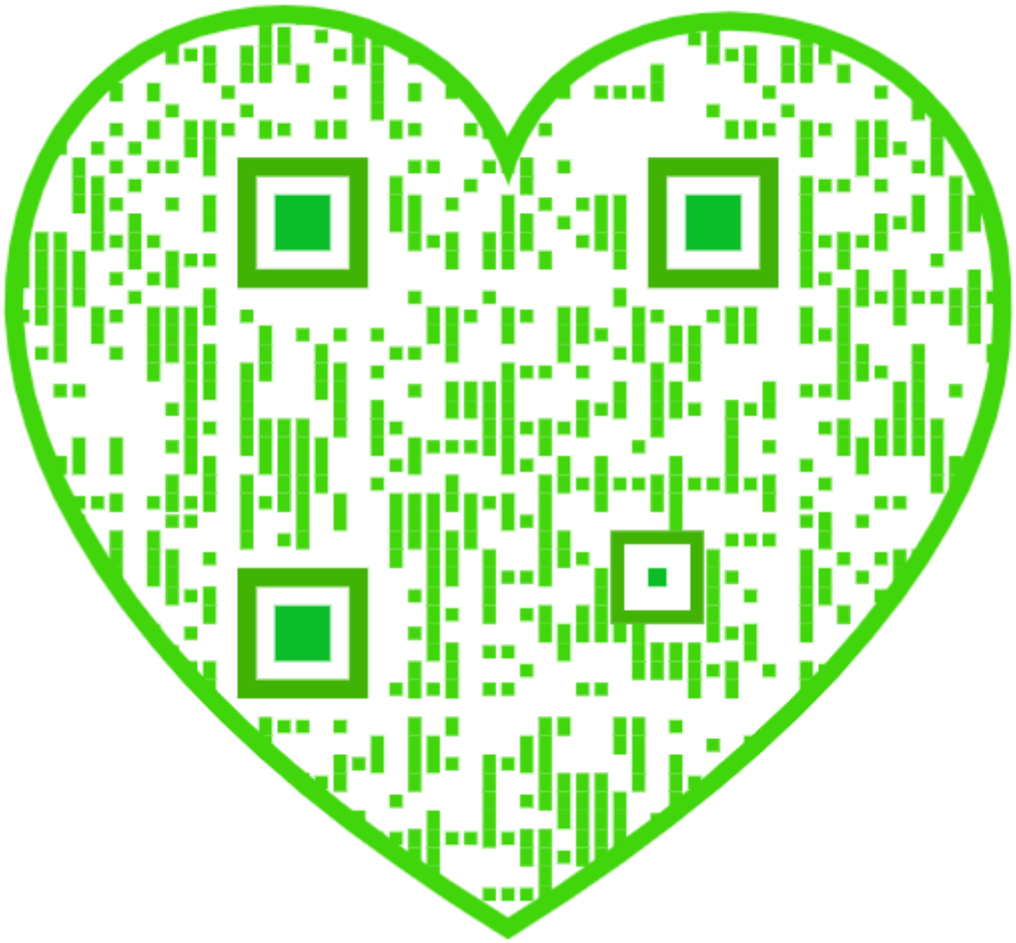

The Art of Dyeing—No. 18.

CHROME GREEN—This color is the most common that is dyed on cotton, and great care is required in dyeing it. The goods are first bottomed in a blue vat to the depth of shade desired, the same as for bark greens. Unless the blue is evenly colored, it cannot be expected that a level color will be produced, it will certainly be streaked—light and dark. The blue vats, therefore, must be in the best working order, and it is best to give the goods at least two or more dips in vats of varying strength. When the proper depth of blue is obtained, the goods receive a weak sour, with a brittle vitriol in a tub of cold water. They are then washed well, and wrung up or squeezed, for the chrome process. For ten pounds of goods four ounces of the bichromate of potash, (chrome) on the top of the blue base, will produce a depth of yellow sufficient to make a good green color. For ten pounds of goods, therefore, four ounces of chrome are dissolved in one vessel, and twelve ounces of the acetate (sugar) of lead are dissolved in another. The lead solution is then stirred up in a tub of cold water, and the goods entered, and well handled for about ten or fifteen minutes. They are then lifted, wrung or squeezed, and entered into another tub of cold water containing the chrome solution. In this they are rapidly handled for five turns, then quickly wrung or squeezed, and entered again in the sugar of lead solution, out of which they are taken, washed and dried.

It is oftentimes necessary to give chrome greens two dips, but in every case the goods must be rapidly handled in the chrome, and suffered to be exposed to the air for a very short time before they are run through the lead solution.

Chrome greens are employed principally in the gingham manufacture. They are very liable to be brown spotted, especially when attempted to be dyed with lime in the lead. Nitrate of lead should never be used in dyeing green; the acetate alone must be employed. After the goods get the last run through the sugar of lead tub, they are rendered more permanent by running them through a weak solution of common salt, before they are dried. Some employ a weak solution of the sulphate of zinc for the same purpose. We have heard of great trouble being experienced in many factories in the coloring of chrome greens, with respect to the goods spotting brown. They are always liable to dry in brown spots in a hot stove room, especially if they have not been thoroughly handled in the last lead solution, but if well handled in this, and dried in a moderately warm room, little fear need be entertained of such spots.

ARSENIC GREENS—This color stands washing with soap very well, and is therefore well adapted for ginghams, but for the sake of humanity we trust it will seldom be dyed. As a matter of science, however, we must describe it. The substances employed to dye it are caustic alkali, sulphate of copper and arsenic. The goods are run through a vat of caustic alkali lye, wrung or squeezed, then run through a strong solution of arsenic and blue vitriol (sulphate of copper.) They are aired well after every dip. It takes six or seven dips—one after another—in the arsenic and copper solution, and the alkali vat, to produce but a moderate shade of green. This color is sometimes called "sage green," "sea green," and "Scheele's green." It is dangerous to health to dye this color, and more dangerous to handle the goods after they are dyed. They require to be exceedingly well washed, and yet they are found to be dusty. The arsenic and blue stone are precipitated in the pores of the cotton, in such a finely subdivided state, that it is very difficult to cleanse the goods. The dust, therefore, which may come off such goods, is a deadly poison.

GREEN ON SILK—The universal and common green dyed on silk is with the sulphate of indigo and fustic, or with turmeric, as a substitute for fustic. The silk is prepared in an alum mordant of about 2°, so as to feel pretty sharp to the taste, then dyed a yellow with fustic in a tub. A boiler or kettle containing strong fustic liquor is raised up to nearly a scalding heat, and sulphate of indigo added to give the proper depth of blue. In this the goods are handled—at the same heat—until they acquire the proper shade. If more blue is wanted, give more sulphate of indigo; if more yellow is wanted, add more fustic, and a little alum water. This green will stand exposure to the sun.

TURMERIC GREEN—By using turmeric and the sulphate of indigo altogether in the kettle, beautiful greens can be dyed at one dip without any mordant; but turmeric yellow fades rapidly when exposed to the sun; it however produces a beautiful color. Ebony will dye a green when used as a substitute for the fustic. The *extract* of indigo now sold by druggists is much used for dyeing green on silk, but good sulphate of indigo is better. Warm water will strip off the sulphate of indigo, and so will warm rain. Ladies who have green silk dresses, ribbons, or bonnets, should be very careful not to get them wet. Green parasols are also liable to run (the color we mean) with a shower of warm rain. Fast green on silk is dyed by giving the goods a base of blue in an ash vat, the same that is used for dyeing wool, then preparing them with alum mordant, and dyeing a fustic yellow on the top.

Recent Foreign Inventions.

COMPOSITION FOR COATING IRON AND OTHER SHIPS BOTTOMS—Albert Robinson, of London, patentee—This invention consists in the application of a complete covering of black lead or plumbago, to the bottoms of iron or wooden ships and vessels, and other surfaces. The following is the mode of carrying out the invention:—Take 6 cwt. of mineral or Turkish asphaltum, or best purified coal pitch, melt and boil it for 6 hours, then add 30 gallons of boiled linseed oil; allow it to cool to the temperature of 240° Fah. Mix previously 6 cwt. of best purified ground plumbago, together with 60 lbs. of arsenic of copper, finely pulverized, with 80 gallons of rectified coal-tar naptha; when the plumbago, arsenite of copper, and naphtha, are well mixed, add to the melted asphaltum, at the temperature of 240°; mix the whole together, and put away in tight vessels for use. In order to apply the composition, first clean the surface to which it is to be applied thoroughly; then stir up the composition, and apply like paint; three coats will be desirable to produce a smooth polished surface. The bottoms of vessels may be rubbed with rubbers or pieces of felt, but the process is not absolutely necessary, as the friction of the water by the vessel passing through it, soon makes the blacklead surface smooth.

EXTRACTING COPPER FROM ITS ORE—R. A. Brooman, of Fleet street, London, agent of inventor—The invention consists in mixing ammonia with the ore after the same has been crushed, in agitating the mass, and in introducing a current or currents of air into the same while being agitated. No roasting of the ore is necessary in carrying out this invention.

The manner of proceeding is as follows:—In treating one tun of ore, about 15 to 20 cwts. of water are used, to which a quantity of ammonia is added. The quantity of ammonia varies with the quality of the ore, but must never exceed twenty-five per cent. of the quantity of water. The ore and liquid are then placed in a vessel fitted with an agitator, to which motion is communicated from a steam engine or other prime mover; and while the mass is in agitation, air is introduced from a fan or blower through a pipe which enters the vessel. After the agitating and blowing have been acting for from about six to eight hours, oxyd of copper will be held in the liquid. The liquid must be drawn off and evaporated, when the pure oxyd of copper will remain after the evaporation. The ammonia may be recovered, with little loss, by the processes ordinarily employed for its recovery.—[Newton's London Journal.

A CLOCK OF FLOWERS—Dr. Lardner reminds us, in his *Museum of Science and Art*, that Linnæus proposed the use of, what he termed, a floral clock, which was to consist of plants which opened and closed their blossoms at particular hours of the day. Thus, the day lily opens at five in the morning, the common dandelion at six, the hawk-weed at seven, the marigold at nine, and so on; the closing of the blossoms making the corresponding hours in the afternoon.

Florida Sea Island Cotton.

Sea Island cotton is one of the grand productions of Florida. From her insular position, quality of soil and blandness of climate, this delicate and valuable crop is very successfully cultivated. It is said that this crop is produced the best where the soil is composed of clay, strongly mixed with vegetable decomposition. As a manure for cotton lands, sea-weeds and marsh-mud are found to be excellent, increasing the quantity of the crop without injuring the fineness and glossiness of the staple. The cotton seed is planted in rows, from six to eight feet apart, and the plant kept free from weed by the use of the hoe and plow. The shrub grows rapidly, and throws out a profusion of rich yellow blossoms, and at length the pods appear. These, bursting open about September, reveal their snowy treasures to the planter's gaze. The field must now be picked, as exposure to the weather injures the fine gloss of the cotton. The down is collected, exposed on a scaffold to dry, and is then passed through the gin, whose thousand fingers quickly separate it from the seed, after which it is packed in bales and is ready for the market. As the pods do not open all at a time, several pickings are necessary to clean the field, The cotton shrub grows very luxuriantly in Florida; the writer has seen a specimen produced in Marion county, which more resembled a tree than a shrub, the lower branches being sufficient to sustain the weight of a man. The cotton crop is liable to many accidents: the caterpillar sometimes destroys whole fields of it; the red-bug pierces the pod and discolors the cotton, and a heavy wind sometimes entirely destroys the pod. Good cotton lands will yield three or four hundred pounds to the acre, and it is said that one hand may cultivate about three acres. The price of the article varies according to the quality and state of the market from 15 to 20 cents per pound.

To every hundred pounds of cotton produced, there are about ten bushels of seed, weighing forty pounds to the bushel. Experiments have been made in turning the seed to account, by extracting oil from it; and we believe the result has proved that about half a gallon of crude oil may be obtained from a bushel. The oil cake may be also used for cattle and horses. It is thought by some, that the seed used in this way would pay one half of the labor required for the cultivation of the crop.—[Florida News.

The Use of Chloroform.

The London *Lancet* comes to the conclusion that the use of chloroform must be measuredly abandoned. There is no doubt, says the *Lancet*, that the novelty of the practice, the remarkable effects produced, and the freedom from risk, too unhesitatingly asserted, have led to very grave abuses. Had chloroform never been inhaled save when its use was necessary, lives would not have been sacrificed to the removal of a tooth, a toe nail, or a little finger, in tapping a hydrocele, or touching a sore with caustic. Its use should be reserved for those cases only in which the intensity or duration of the pain in an operation constitute serious complications, or where insensibility is essential to the proceedings of the surgeon.

On the Occurrence of Fossil Bones in the Auriferous Alluvium of Australia.

Fossil bones of extinct mammalia have been found throughout a range of eleven degrees of latitude, and at hights varying from 100 feet below, to 1600 feet and upwards above, the sea level. Such bones occur in the gold drift in the Ural, and in California; and in the latter country, as in Australia, this drift is frequently overspread with the products of volcanic outbursts, or with the debris of volcanic rocks. It would appear that a great part of the now dry land of these countries was under the water when these osseous remains were buried; and probably the destruction of the mammalia at last was connected with the final outbreak of igneous forces, which changed the horizon of considerable tracts, and introduced a state of things incompatible with the existence of these, for the most part, gigantic animals, now extinct.

Gas Regulator.

In the list of patent claims published in the last No. SCIENTIFIC AMERICAN, was one granted to S. P. Parham, of Trenton, N. J., relating to a subject which has engaged, and is still engaging much attention, viz: the perfect regulation of gas during its consumption. The regulator of Mr. Parham consists of a chamber into which the gas enters through a nipple at the bottom, and from which it passes to the burner through an opening above. This chamber contains an inverted cup to cover the nipple, and a conical valve to fit the opening at the top, the valve and nipple being attached to the same stem. The cup is larger than the nipple, and the top of the latter is serrated, so that the gas can always escape freely into the cup and down its sides to enter the chamber. The entrance to the passage which forms the seat of the valve is made slightly elliptical, so that it never can be perfectly closed by the valve. The cup, the valve, and the stem are all made of such thin metal as to be light enough for the gas as it is passing through the chamber to the burner to suspend them. The flow or consumption of gas is regulated by the position of the valve, which will be so controlled by the relative pressures in the chamber below and the burner above, that the area of the opening between the valve and its seat will always be proportional in the inverse ratio to the pressure of the gas in the pipes. An increased pressure of the gas in the pipes and chamber raises the valves and contracts the opening, a diminished pressure caused the valve to drop and the opening to be enlarged.

Improved Boring Machine.

The patent obtained last week by C. N. White, of Concord, N. C., relates to the drill for boring in the earth for mining and other purposes. The improvement consists in the combination of a revolving frame and weight with inclined movable rods attached to it in such a manner as to rotate the drill a certain distance to make it strike a new place every stroke, in a different manner from any such machine in common use.

Wallis' Patent Paddle Wheel.

A small steamboat fitted up with this novel improvement was lately tried in the harbor of New York with remarkable success. The vessel had previously been propelled by the common paddle wheels. With Wallis' improvement attached, the boat went one-third faster than before—engine and steam pressure being the same. We have delayed remarks upon this invention, owing to the pendency of foreign patents. We are now preparing engravings for publication, shortly to appear, when we shall explain the principles and give some other interesting particulars relating to the improvement.

Ships Windlasses.

The nature of the invention of James Emerson, whose claim will be found on another page, consists in the employment of geared sectors, with pawls attached to them, and half pinions, levers, and pulleys, arranged and combined so as to increase or lessen the speed of the main barrel, on which the cable is wound, so that the speed will be slow when great power is required, thus affording ease to the operators, at an expense of time, and it will be quick, when there is small strain upon the cable, so as to be quickly operated, to save time, thus economizing the power applied to work it.

This windlass can be operated with more ease and convenience than the kind in common use.

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(For the Scientific American.)

Lateral Motion of the Earth.

Owing probably to the great snow storms in February, I received but one number of the SCIENTIFIC AMERICAN for that month up to the 27th of March, when I received the 22nd number, containing the remarks of your correspondent, A. Z., on my article under the above caption, and finding that he has misunderstood me, and thinking it probable that others may have done so, I will attempt another explanation. I never came "to the most singular conclusion, that the axis of the earth is moving east," but to the conclusion that what is now the north pole of the earth, is moving in an eastern direction from its axis from that point, and the south pole in a western direction, each towards the other pole—on another axis perpendicular to this and passing through its center, with its ends or poles at the equator, probably near the eastern coast of South America, and its antipode. Leaving the axis of diurnal rotation just where it was, in the same direction with regard to the heavens, but the earth changing in regard to it. M. Arago says, "Geometry demonstrates that every body may turn in a constant and invariable manner round three axes perpendicular to each other, and passing through its center of gravity." But from the supposed cause of this motion as given in the first article—this may be what astronomers call an instantaneous axis, liable to change and cause the earth to revolve in an undulating plane. The variation of the needle, and the revolution of the equinoxes, by which the axis of the earth, if produced to the heavens, describes a circle equal to twice the inclination of the earth's axis, 46° 56′ in diameter, around the celestial pole, may have led astronomers to account for apparent changes, in terrestrial directions, by ascribing them to these, or to geological changes, and so overlook such a motion, even if there is such.

The variation of the needle here is now about 10° to the east, the line on the government surveys, 7½, and the needle has not raised perceptibly from these lines for nineteen years, perhaps not since they were run. However singular this polar motion theory may be, it appears to me that it cannot be more erroneous than the central heat theory, for its advocates say "the fossil intertropical plants found in Europe just where they grew, and which are larger than any of the same kind now found between the tropics, lived when the central heat being much nearer the surface than it now is, and by evaporation caused a dense fog, which enveloped the earth, and diminished the rigors of winter by preventing the radiation of heat from the earth, and plants and animals now found only between the tropics could then live anywhere, even under the poles." It is now well known that light is as essential to a healthy and vigorous vegetable growth as heat, and a fog dense enough to prevent the radiation of heat from the earth, would prevent the radiation of light from the sun, and so make it necessary to resort to internal fires for light, which to make one-half as brilliant as that of the sun, would scorch everything to death. I think it no less rational to suppose they grew when that part of the earth was between the tropics, and its soil then recently emerged from the ocean, and being newly fertilized by the myriads of inhabitants of that element, and the washings from other lands, was every way adapted to the growth of plants superior to those now found there. It is not necessary that the earth should originally have been in a state of fusion to have caused an accumulation of matter at the equator. Newton suggested it, I believe, in advance of this theory; and any person who observes the vast amount of solid matter carried down by our western rivers, and knows that all matter held in suspension by the waters tend, by the centrifugal force of the earth's rotary motion, towards the equator—that the largest river in the world, the Amazon, empties upon it—that the mouth of the next in size, the Mississippi, is constantly approaching nearer to it, that the greater the accumulation of matter at the equator, the greater is its tendency to accumulate, like compounding interest—may, without any extraordinary stretch of the imagination, conclude that if the earth has attained anything like the great age assigned to it by geologists, and there has been no change of place in the equator, it would ere this have loomed up, so as to cause the earth to lose its spherical form, and assume one approaching to that of a coin.

The great length of some of the mountain chains indicates that they were thrown up under the equator, for we know of no other adequate cause for such prodigious and extensive effects, and even if the internal mass of the earth is not in a molten and liquid state, the mud washed from the land would in many centuries accumulate in some parts of the bed of the ocean in sufficient quantities for this, which being thrown up and sustained by the equatorial motion would become indurated by petrifaction, and by drying before it passed from over this sustaining force.

If there is a motion in the earth in the direction of its poles, it follows that the land, with its rivers, etc., must pass under poles as well as under the equator, where the centrifugal force of the earth's rotary motion would be so much diminished, that the increased attraction of gravitation would be likely to detain the waters of rivers, where they would spread out into the seas, until their channels had passed far enough from the pole for the centrifugal force to act on them again, when they would again commence flowing towards the equator, and leave the lands which they had submerged at the pole; and as the western coast of Greenland which is next to the north pole, has been sinking for four centuries, and the coasts of Sweden and Newfoundland, which are further from the pole, are rising, this motion may account for it. Be that as it may, it accounts for many things which, without it, require a dozen other theories, and so has the advantage of simplicity. It also has analogy in its favor, for all the great operations of the universe, so far as known, are carried on by revolving movements. And this (if there is one) is one of those sublimely slow movements which requires thousands of years to complete a revolution. H. P.

Lafayette, Mo., April 11, 1855.

(For the Scientific American.)

The Mexican Snake Bird.

Having read a brief description of the snake bird, in a number of the SCIENTIFIC AMERICAN (1854) sent me by my brother, I thought that a more extended description of its nature and habits would be interesting to your readers, especially as I have been a resident in this country for more than ten years.

This bird inhabits not only all the southern coasts of Lower California, but all the hot climates of the Republic, and both Central and South America. It goes by the name of Hicaco—pronounced *soaco*. Its color is almost black, and mottled. Its tail is composed of four or five dark mottled feathers, about ten inches long. Its beak is two and a half inches long, slim, hard, and very sharp. Its length is about twenty-two inches from the tip of the tail to the point of the beak. Its weight is about one pound. It has four toes on each foot; its claws are sharp and slender. Its food is grain of all kinds, seeds, and fruit, and particularly the fruit of the cactus, which is abundant in all the hot climates. This fruit is about the size of a small lemon, and is covered with prickles like a chesnut bur. When fully ripe, however, these are easily removed, and it is very fine. This bird has plenty of these, consequently he has an abundance of spare time on hand to make war against all the snake species. With such zeal does he prosecute the warfare, that he seems to have been ordained to keep within certain limits this species of reptile, so dangerous to the human family. No sooner does he see a rattle snake, than he proceeds to gather in his beak and claws the leaves and vines of a certain plant (the hicaco,) and drops them cautiously upon his sleeping foe, at the same time diving down upon him, and screeching in a most threatening manner. This puts the snake upon his guard, not seeing his most mortal enemy (the plant). If he should get away, the bird again catches it in his beak, and drops it upon him as before. In about three minutes, the snake becomes so stupified as to fall an easy prey to the enraged bird, which is so strong, although not large, that he will take a snake four feet long by the tail, and fly up with him into the air to the hight of 600 feet, and let him drop down to be dashed in pieces. An infusion of this plant (the hicaco—from which the bird gets its name) in brandy, taken into the stomach immedately after a person has been bitten by a snake, stung by a scorpion, or any poisonous reptile, &c., has been stated to be a most powerful antidote to the poison. It is in general use in all the hot climates, where poisonous reptiles abound.

The common way of treating snake bites is, to cut out the wounded piece at once, suck out as much of the poison as possible, and take a dose of the hicaco, sufficient to produce partial intoxication. It is said to prevent, in nine cases out of ten, the setting of the jaw of persons bitten by snakes, and produce relief in from twelve to twenty hours. JOHN S. BLAKE.

Japalpa, Mexico.

(For the Scientific American.)

Chemistry of Steam and Iron.

Experimenters have found that it takes as much heat to convert one pound of water, after it is boiling hot, into steam, as it does to raise the temperature of 5½ lbs. from 32° to 212°, or 990°. The capacity of iron for heat is about one-ninth of that of water, hence it follows that the heat required to evaporate one pound of water would raise the temperature of one pound of iron 990×9=8910°, or 15 lbs. of iron from 212° to (8910÷15+212=806°) a red heat in day light. Or in other words it would require 15 lbs. of red-hot iron to evaporate one pound of water after ebullition has commenced. And, 62·5×15=937·5 lbs. of red-hot iron to evaporate one cubic foot of water into steam, which, at the ordinary pressure of the atmosphere, will occupy a space equal to 1,700 cubic feet. Under a pressure of 100 lbs. to the square inch, however, it will only occupy a space equal to about 260 cubic feet. Therefore it will require near a thousand pounds of red hot-iron to generate 260 cubic feet of steam under a pressure of 100 lbs. And should the space occupied by the steam be equal to 260 cubic feet, the steam generated by the 1,000 lbs. of red-hot iron would increase the pressure to something over 200 lbs. to the square inch.

Water is composed, by weight, of eight of oxygen and one of hydrogen; and as a cubic foot of oxygen weighs 48 grains, and one of hydrogen 3 grains, it is composed of one volume of the former to two of the latter—three cubic feet of the gases, thus weighing 48+3+3=54 grains, or 54÷3=18 grains per cubic foot, and as water weighs 62·5×7000=437,500 grain per cubic foot, the gases that form water occupy 437,500÷18=24,305 times its space, or 24305÷1700=14·2 times the space of steam. If steam pass over a surface of red-hot iron, the oxygen unites with the iron, forming an oxyd, whilst the hydrogen is set free. The hydrogen thus liberated will occupy a space equal to 14·2—14·2÷3=9·5 times that of the steam, considered as at ordinary temperature, but as it will be heated to at least 212° it will occupy a space equal to about 12 times that of the steam. The oxyd formed by steam is the black oxyd, which is considered to be a mixture of the two oxyds of iron, and is usually composed of about one part of oxygen to three of iron—hence one pound of oxygen is required to convert three pounds of iron into oxyd. Now, as there is about one pound of oxygen in 34 cubic feet of steam, three pounds of iron converted into oxyd will set free 34×12=408 cubic feet of hydrogen, or will increase the bulk of steam 408—34=374 cubic feet, or each pound of iron oxydized will increase it 374÷3=124·7 cubic feet. Thus it appears that the conversion of one pound of iron into oxyd, will enlarge the bulk of steam as much as 70 lbs. of red-hot iron will, by being cooled. And if a scale on the inside of a boiler 1-280 inch in thickness should be oxydized it will cause the steam in the boiler to expand to as great an extent as it would if the whole of the boiler was cooled from a red heat.

Water is likewise decomposed by electricity. And it is known that electricity is evolved during evaporation. May not the mysterious principle of which we know so little, in some way unknown, decompose the aqueous vapor in a steam boiler, and cause it to expand to near twenty times its volume? J. B. CONGER.

Jackson, Tenn.

Letter from Mr. Worthington.

MESSRS. EDITORS—The undersigned must be the "well known pump maker" whom you favored with a notice last week. He is somewhat surprised, if not gratified, to find that the results of his visit to Washington were so great and unprecedented as to suggest the use of "unexplained means."

From your point of view, it may appear that said pump maker is over-strenuous in maintaining what he considers to be his rights. But you have not heard all of his story yet, for the reason that all of his claims are not yet on public record; when they are, he will trust to your understanding to reach, and to your sense of justice to give him the advantage of more favorable conclusions. With other patentees this is, at present, no place to contend. As "pump maker," the undersigned occupies very circumscribed ground. By and by it shall appear, that if any one has planted his foot on this little patch, it may be well respectfully to request him to step off.

The somewhat equivocal introduction you have given him to the public will suit his purpose very well if you publish this communication. It would be folly to loose the benefit of your piquant notice by omitting to give it a little direction.

H. R. WORTHINGTON.

28 Broadway.

[A gentleman has appeared, it will be seen by the above article, who claims to be the party to whom the note referred, which was appended to the end of the claim of Mr. Gorsuch in our edition of the 14th inst. We do not see the point of this gentleman's letter, for he neither admits nor contradicts the truthfulness of those remarks, but as he seems anxious to assume the title of "well known pump maker," we publish his letter, and in order to benefit him still further, we would refer our readers to his advertisement in another column.—[ED.

Discoveries in Old Sidon.

In the winter of 1853-4, some Musselmen who were digging for treasures in the old grave yards of the city, uncovered three copper pots, each containing eight hundred pieces of gold. The whole value of the treasure was about $12,000. After this discovery, excavations were commenced upon a larger scale, and as it has turned out, with more important results.

On the 19th of January last, some men were digging for more hid treasure in an ancient cemetry on the plain of Sidon, called *Mughorat Tubloon*, when at the depth of about twelve feet below the surface, and near the walls of an ancient edifice, they uncovered a sarcophagus, upon the lid of which is a long Phœnecian inscription. The lid is of a blue black marble, intensely hard, and takes a very fine polish. The lid is about eight feet long by four feet wide.—The upper end is wrought into the figure of a female head and shoulders, of almost a giant size. The features are Egyptian, with large, full, almond-shaped eyes, the nose flattened, and lips remarkably thick, and somewhat after the negro mold. The head dress resembles that which appears in Egyptian figures, while on each shoulder there is the head of some bird—a dove or pigeon—and the bosom is covered by what appears to be a sort of cape with a deep fringe, as of lace.

The engines of the new steam frigate *Niagara* are being built by Pease and Murphy, of this city, and are to be splendid pieces of workmanship.

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New Inventions.

Turning the Leaves of Music Books.

The patent granted this week to Isaac Gallup, of Mystic Bridge, Conn., for an apparatus to turn the leaves of music books, relates to an improvement in the leaf turning apparatus of Bridgham & Stewart, illustrated in No. 11, present Vol. One improvement consists in an arrangement of parts which obviates the necessity of employing a separate contrivance for returning the leaves to repeat a part of the piece of music. Another improvement obviates the employment of a separate device for locking the finger to prevent a leaf returning before the tune is finished, or for unlocking the finger to turn back for repeating. This is done by providing each of the keys with a notch and a spring catch to fit into each notch. The fingers for turning the leaves are thus placed conveniently under the control of the performer.

Carhart's Melodeons.

Jeremiah Carhart, of this city, whose name appears in the list of claims this week, has been long distinguished for the many improvements which he has made in the manufacture of melodeons, for which he has already secured a number of patents. The nature of the improvements embraced in his present patent, consists in a certain arrangement of reeds and valves relatively to the bellows, the principal object of which is the convenient application of hammers to the reeds in connection with an exhausting bellows. Also in a certain arrangement of the striking action for the same purpose, and in a certain application of a buff between each reed and its respective hammer.

New Hay Press.

The patent which has been granted this week to Pells Manny, of Waddams Grove, Ill., relates to the lever press. It presses the bales into a square form, and the levers act so as to press them when moving both forwards and backwards; that is, no time is lost when one bale is pressed, in returning the followers to the point where they commenced, to press in the box, a second bale from the point where they commenced to return. There is no time lost, therefore, in running back the followers, and hooping the bale, as this is done while the box is being filled for the succeeding bale. With a proper supply of hands this press can accomplish a great amount of work in a very short space of time. It is adapted for pressing cotton as well as hay.

Stud Fastener.

In the list of patent claims for this week will be found one granted to S. H. Hopkins, of Providence, R. I., for a very neat improvement in fastenings for shirt studs, buttons, &c., by constructing the shank of the stud or button in the form of a small tube, having a spring in it, and a bar connected with the stud in such a manner that the stud will be effectually secured in the eyelet, and cannot escape. Common studs are very liable to come out and be lost, and besides, their shanks are in general so short that they are troublesome to place in the eyelets of shirts. This improved fastening will prevent the stud from coming out of the eyelet, and thus from being lost.

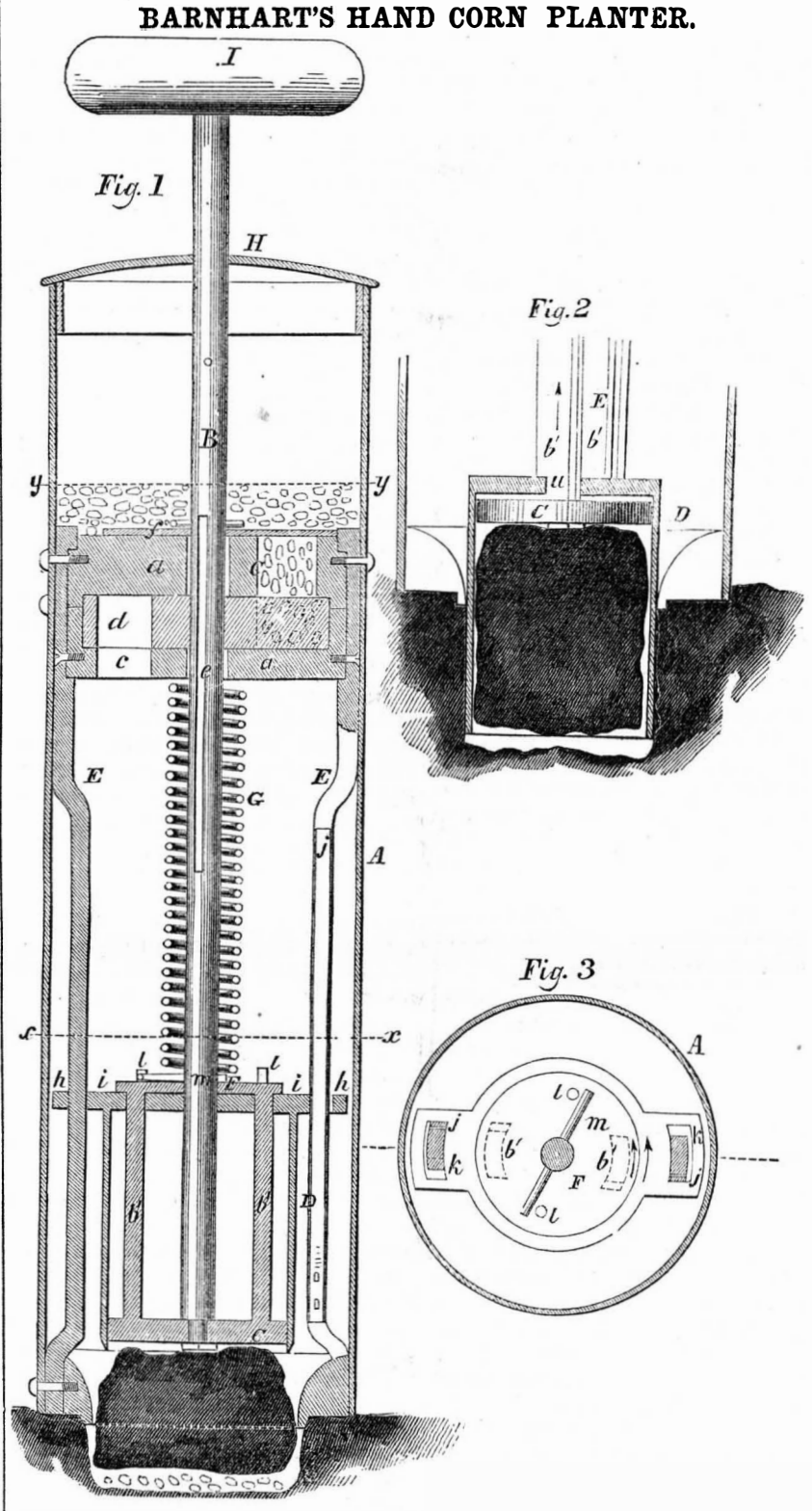
Gas Cooking Stoves.

Some years ago we endeavored to impress upon the community the importance and benefits that would result from the application of common gas to cooking purposes. On page 32, Vol. 8., Scientific American, we presented three figures of a stove for cooking with gas, and stated how convenient such apparatus would be, especially in summer. We are glad that our remarks have produced their fruits, as will be observed by the patent which has been granted this week to Andrew Mayer, of Philadelphia, for a new gas cooking stove. The claims express pretty clearly the nature of the improvements. The expense and perfect regulation of the heat of the gas under combustion, being obstacles heretofore to the use of gas for cooking, the improvements are designed to remove these. No one will question the beauty and convenience of using gas for cooking purposes. The time is not far off when charcoal and other coal furnaces will be numbered with the things that were.

Life Preserving Doors and Partitions.

The patent granted this week to Capt. J. P. Pheatt, of Toledo, Ohio, for converting doors into life preservers, relates to those of steamboats and sailing vessels, so that they can be used to save life in cases of danger. It consists simply in attaching air-tight compartments to the panels of doors and the partitions of cabins. An air tight bag is is attached to each panel and partition, and to it is attached a tube with a screw valve, by which it is inflated with air and closed, so as to make it very buoyant. How often have we heard of persons' lives being saved in shipwreck by floating on doors; this improvement will render these more available and useful in such cases of danger.

BARNHART'S HAND CORN PLANTER.



The annexed engravings represent an improvement in corn planters, for which a patent was granted to Andrew J. Barnhart, of Schoolcraft, Mich., on the 27th of last February.

Figure 1 is a vertical section of the planter; figure 2 is also a section, but broken off near the foot, and showing a different position of parts. Figure 3 is a horizontal section taken at *x x*, figure 1, showing the plane section. Similar letters refer to like parts.

This machine makes the necessary hole in the ground, and the corn is dropped and covered by it.

A represents a cylinder which may be constructed of sheet metal, and having permanently secured within it two disks or plates, *a a*, between which a loose disk, *b*, is placed. The disks, *a a*, have each a vertical aperture, *c*, made through them near their edges at opposite sides of their centers. The disk, *b*, also has a vertical aperture, *d*, made through it. B is a rod which passes through the centers of the disks, *a a* and *b*, said rod having a feather, *e*, upon it which fits in a groove near the center of the disk *b*, so that by turning the rod, B, the loose disk, *b*, will turn with it, but the rod may be moved up and down without moving the loose disk. On the rod B, above the top disk, *a*, there is a plate, *f*, through which the rod passes the feather, *e*, fitting in a groove in the plate, causing the plate to turn with the rod. To the lower end of the rod, B, there is attached a piston, C, which works within a cylinder, D, constructed of metal, and having eyes or apertures, *h h*, in projections, *i i*, on its upper part, through which eyes or apertures guide rods, E E, attached to the inner surface of the cylinder, A, pass. The guide rods have springs, *j j*, attached to them, one to each, and they have recesses, *k*, in them, one in each, as shown by dotted lines in figure 3, in which recesses the edges of the eyes or apertures, *h h*, catch when the cylinder, D, is raised; F is a circular plate attached to the piston, C, by rods, *b' b'*, the rods being equal in length to the cylinder, D, and passing through its top. On the upper surface of this plate two small vertical pins, *l l*, are attached, against which a small rod, *m*, which passes through the rod, B, acts; G is a spiral spring placed around the rod, B, and between the plate, F, and lower disk, *a*, as shown in figures 1 and 2; H is a cover or top of the cylinder, A, and I is the handle of the rod, B.

Operation—The corn to be planted is placed in the upper part of the cylinder, A, above the disk, *a*, and the lower end of the cylinder, A, being placed over the desired spot, the rod, B, is first drawn upward, and then drawn from right to left, in order to bring the left plate, *f*, over the aperture, *c*, in the disk, *a*. This plate cuts off all connection between the aperture, *c*, in the disk, *a*, and the space above it, which is in fact the hopper containing the corn, the aperture, *c*, in the upper disk being filled with corn before being cut off by the plate, *f*, and as this plate is turned, the loose disk, *b*, is also turned, and its aperture, *d*, brought under the aperture, *c*, in the disk, *a*. When the rod is turned from right to left, the small rod, *m*, which passes through the rod, B, acts against the pins, *l l*, on the plate, F, and the edges of the eyes or apertures, *h h*, in the projections, *i i*, in the upper end of the cylinder, are in consequence forced out from the recesses, *k*; the rod, B, is pressed downward, and the cylinder, D, is forced into the ground and then withdrawn by drawing up the rod, B, the cylinder, D, being filled with earth, and a hole formed in the ground. When the cylinder is withdrawn the edges of the eyes or apertures, *h h*, catch into the recesses, *k*, being forced in by the springs, *j j*, and hold the cylinder, D, properly in place. The rod, B, is now turned from left to right, and the aperture, *d*, in the loose disk, *b*, is brought over the aperture, *c*, of the lower disk, *a*, and the corn in the aperture, *d*, falls through the aperture, *c*, in the disk, *a*, and passes down around the cylinder, D, into the hole made in the earth by the cylinder, D, when it was pressed into the earth. The rod, B, is now forced down, the spring, G, assisting, and the piston, C, forces the earth out of the cylinder, D, into the hole in the earth, and covers the corn which was dropped therein. Figure 1 shows the position of the parts when the corn is covered, and figure 2 shows the parts when the cylinder, D, is forced down. The rods, *b' b'*, have recesses, *u u*, at their lower end, one is shown in figure 2, which, when the plate, F, is first turned from right to left, catch over the edges of the slots in the head of the cylinder, D, through which slots the rods, *b b*, pass, and allow the cylinder to be forced down by pressing down the rod, B, and when the rod is turned from left to right the recesses, *u u*, are freed from the edges of the slots and allow the piston to be forced down. By this invention the whole operation of planting is performed, viz, the necessary holes made to receive the corn, the corn dropped in them, and then covered with earth, the implement being grasped with one hand, and the rod, B, operated with the other, the lower end of the implement being placed over the spots where the corn is to be planted

More information may be obtained by letter addressed to the patentee.

New Rotary Engine.

An improvement in rotary engines is not a very common occurrence now, but on another page will be found the claims of the patent of one granted to J. J. Thomas, of Manayunk, Pa., for improvements in this class of motors. The object of one improvement has reference to the absence of all packing in the piston or engine, except the stuffing box of the shaft. The difficulty of keeping rotary engines properly packed has always been an objection to their use.

Worcester Mechanics Association.

The Worcester (Mass.) Mechanics' Association appears to be in a flourishing condition. After paying all the expenses of the past year, it has a balance in the treasury of $2,194.

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Scientific American.

NEW YORK, APRIL 28, 1855.

Agricultural Implements.

We remember very well, in the early years of the SCIENTIFIC AMERICAN, of the complaint being often made that improvements in agricultural machines had not kept pace with those of machinery for manufacturing purposes. Since the time we first commenced to direct attention to such machines, we may fairly claim for their inventors an intensity of application, and a success in adaptation, equal to if not surpassing all other kinds of machinery. All our farmers realize, with pride and satisfaction, the vast number of improvements that have been made within a few years on old agricultural machines, and the introduction of a great number of entirely new ones. This also affords us a great amount of sincere satisfaction; we having labored in our own way to bring about such happy results.

Our agricultural readers will perceive that we have illustrated two agricultural machines this week—a cultivator and a hand seed planter. The SCIENTIFIC AMERICAN being the only true repertory of American inventions, it is the source to which our inventors go to have their inventions illustrated and brought before the world, and the only source to which our people look for such information. Since the commencement of this volume, no less than twenty-five new patented agricultural machines have been illustrated in our columns, and these embrace almost every variety, from an ox-yoke to a churn. This, independent of fifty-nine figures of reapers and mowers, makes over two engravings of agricultural implements which we have illustrated and described every week. The SCI. AM. is therefore one of the best farmers papers in our country, and it gives us sincere pleasure to know that our agricultural cotemporaries appreciate the good that it has done and is doing in this department of the useful arts. Every new machine which we illustrate and describe sets a number of inventors thinking and planning. It is thus that a periodical devoted to inventions and improvements, rouses to activity minds that would otherwise have lain dormant, and thus it tends to advance every useful interest and elevate every inventive mind.

Uniform Weights and Measures.

The suits at law in our courts, caused by different standards of weights and measures, show the necessity of having one uniform standard fixed by the United States Government, and of repealing all State laws on the subject. The State of Pennsylvania, by fixing 2,000 pounds as a tun weight, acted consistently with the policy which ought to govern the United States authorities on this subject. Congress has gone one great step towards adopting decimal quantities when it fixed the dime at ten cents, the dollar at one hundred cents, the eagle at one thousand. It ought to go the whole distance now in a matter of so much public convenience, making all the weights and measures of the country conform to one uniform standard, and that based upon decimal quantities. This is far more important to the true interests of business than one-half the legislation of Congress, and we hope that some liberal-minded Member will introduce the subject into that body at the next session. How much more admirably the business of the world would be transacted, and with what a relief from mistakes and losses, if every government were to adopt the same standard of weights and the same measures of capacity and value, by adopting the decimal system throughout.—[Philadelphia Ledger.

[This is an important question, and one which has been agitated among merchants and scientific men in our country for a number of years. It would be a great benefit to commerce and science, if there were a uniform system of weights and measures established throughout the whole world. We cannot expect any such reform in barbarous nations, but we think that all the civilized nations of the earth should adopt one system. It is surprising to us that our government has done nothing to carry out the above recommendation of the *Ledger*, knowing, as we do, the subject has been repeatedly pressed upon its attention for a number of years. We humbly believe that if a greater number of farmers, merchants, manufacturers, and mechanics were sent to Congress, there would be less time spent in party and personal recriminations, and more useful laws would be enacted. We want a number of lawyers in Congress, to be sure, but there are always too many of them sent there. This is not their fault, by any means; it is their *bad* fortune, and people should not *impose* such duties upon them. Petitions have been sent to Congress again and again, praying for the adoption of a metrical decimal system of weights and measures; and in 1853, Alexander Vattemare, of Paris, addressed a letter to Senator Hamlin, Chairman of the Committee on Commerce, recommending this all important subject to his attention, and yet, for all we or the public knows, he might as well have written to a stone wall. Already some of the most insignificant nations of the earth have distanced the United States and England, with all our boasted Anglo Saxon spirit of progress, in this matter. Belgium, Spain, Holland, Greece, Lombardy, Sardinia, Modena, Chili, Columbia, New Granada, and Mexico, have adopted the French metrical system of weights and measures, and why should not we, if it is the best system. If it is not the best system, let us have the *best*, for assuredly our present system is, to use an Irishism, "no system at all." We have Troy weights, and Avoirdupois weights, wet measures, and dry measures, each having its inconsistencies, and all their defects. We long to see the day when all these will be swept away, and a uniform system, as recommended by the *Ledger*, adopted. We have already done so in our currency, why not in weights and measures. It is a shame to us that we have not done so long ago; and that we have suffered ourselves to be surpassed in this respect by such nations as Spain and Mexico. We ought to be the first nation in the world in every thing; we ought to lead the legislation of the world in national reforms, and not be led by any. But when any nation does adopt an *improvement*, let us not delay adopting it also, if it will be beneficial, no matter whence it comes or who is its author. The inquiry should be, "is it a good thing." If the answer is the affirmative, let no delay prevent its introduction. We never can adopt any *improvement* too soon. We hope this subject, as suggested by the *Ledger*, will come up before next Congress. Will some Senator, in the interval, study the subject carefully, and prepare a Bill, so as to introduce it at an early part of the next session, in order that it become a law as soon as possible. We believe that but little if any opposition will be raised against it. The subject cannot but commend itself to the good sense of all. It will be a popular measure with our people, and will meet with their hearty support.

Clay for Fuel.

The New York *Tribune* of the 19th inst., contained a slashing article on the above-named subject, against some scheme which it says "is now being carried out in New Orleans, by which clay is to be made to drive steamboats and locomotives, warm houses, and perhaps to furnish light." It condemns this scheme justly, although, in doing so it exhibits but a limited knowledge of the nature and uses of clay. It is right on the main point, however, viz: that clay is an incombustible substance. Still, we must say, that while it condemns the *gullibility* of the public mind respecting reported new discoveries, it should have done so with a modest confession of its own weakness in this respect, and its agency in gulling the public by the positive assertions which it made respecting the success of a number of schemes far more wild and unscientific than the use of clay for fuel (which really can be employed in many cases as an economical agent in using fuel.) It speaks of the Paine light, and asserts that Mr. Paine, by his statements, so far influenced the public mind as to affect the value of the Hudson & Delaware stock, and other coal property, and that "these statements were certified by some of the most respectable names in New England." This we believe is true, but why leave out New York? Some very respectable names in this city certified to those statements—one of them a professor of chemistry. "And yet," says the *Tribune*, "all he taught was opposed to very simple philosophical principles." True, but where did our cotemporary learn this? There are some kinds of prophets who are great upon predicting events after they come to pass. The following extract from the *Tribune* is exceedingly appropriate: "Two years since, a Cincinnati inventor drove a grist mill with as many wood shavings as he could carry in his hat, and promised to take a steamboat of the largest size to New Orleans with a bushel or two of coal; and this too was certified by men of the highest respectability, who had seen the machine in motion. The object of the inventor, we presume, was accomplished, for, from that day to this we have heard no more of him or his engine." If we change the words Cincinnati and New Orleans, and substitute New York and Washington for them, and then add "one of these *respectable* names was that of an Editor of the *Tribune*,' we will have a positive fact staring out before us. Come neighbor, make an honest fair confession.

The Street Sweeping Machines.

On the 18th inst. Joseph E. Ebling, Commissioner of Streets and Lamps, who has employed the street sweeping machines for sometime in this city, reported against these machines as being incompetent to the work, and unfit to clean the streets satisfactorily.

We are surprised at this report. Can it be possible that in England some of the cities have been cleansed economically for years by machinery, while we in this land of inventive genius confess inability to do so? We cannot believe that American mechanical genius can be discomfitted thus. We have no doubt but our streets can be cleansed by machinery at less cost than by manual labor, and the time will yet come when this will be conclusively demonstrated.

Camels for the Western Wilderness.

Major Wayne has been appointed by the government to proceed to Persia, and purchase fifty camels, and bring them to the United States, for the purpose of army transportation in the great Western Wilderness. It is believed by many that these animals can be acclimated, and made exceedingly useful in our country. We do not see why this may not be accomplished. The horse is not a native of our continent, yet he has prospered wonderfully, both in a wild and cultivated state, since he was first introduced by the Spaniard. The camel is a native of the same country—Arabia—where the horse is found in his most perfect condition. If the horse therefore has thrived here, it is reasonable to conclude that the camel may do so also. We have deserts in some parts of our territories, and for traveling over these the horse is not so well adapted by nature as the camel; we therefore hope that this enterprise will prove successful.

Occultation of Venus.

A beautiful occultation of Venus was witnessed in this city on the evening of the 18th inst. The sky was undimmed by a cloud. About half-past eight o'clock, the planet seemed to rest for ten minutes, like a glittering gem, on the edge of the moon's darkened disk, then paled its light, and retired behind the satellite. It re-appeared again about twenty minutes after nine, but the moon by that time had sunk low in the horizon, and the sky had then become somewhat obscured by mist.

Wonderful Bone.

The bone of a bird has recently been found in the lower clay stratum of the Paris basin, which greatly puzzles the French philosophers. According to anatomists, this bird must have weighed 400 lbs., and its leg must have been like that of a giraffe.

Plans of the New City Hall.

We have received the Report of the Committee of the Common Council on Repairs and Supplies, to whom were referred the several plans and specifications for constructing the New City Hall, in which it is stated that among all the plans submitted, they recommend that of Gilbert, Jackson & Stuart, which they state "excels all others in beauty of design and adaptation to the wants of the city." The general features of this plan are given; the form of the building being quadrangular with an open court in the center. The materials of its external construction are proposed to be of white marble. We had hoped that a better substance would have been employed for this purpose, viz., cast-iron, as we recommended last week. It is far stronger than marble, and can be painted to imitate it, while it would not amount to one-half the cost. Now we go for economy and variety, and if the city can save money by adopting one material in preference to another, which will answer as good a purpose, it is a waste of the public money not to do so, and this we consider will be the case with the material proposed for the New City Hall. We have a marble front City Hall now, and it would look none the worse for a coat of paint to refresh its face. Two structures of the same material—the one placed behind the other—would not be in good taste.

The architects are Albert Gilbert, Thomas R. Jackson, and Henri L. Stuart. This appears to be a new company in such works, and so far as we know, is not distinguished for any single public work, in their united capacity. A great number of plans for the New City Hall have been exhibited and described to us from time to time. We do not remember the names of all their authors, but it is impressed upon our mind that the general features of this plan—the quadrangular with a center court—was described some time ago to us by a different party than the above-named persons.

Paddle Wheels.

It is a singular fact that while every other part of the steamboat has undergone changes and modifications since its first invention, the paddle alone remains stationary and without the least improvement. Yet it is a point to which ingenious men have devoted much thought and inventive labor. Hundreds of thousands of dollars have been expended on new paddle forms, and in the Patent Office at Washington nearly four hundred varieties are found, of which something more than fifty, we believe, have been patented. But nothing has yet been found to take the place of the old original paddle, as it was seen upon the first steamer, and upon the first boat, so far as we know, propelled by a crank.—[Albany Knickerbocker.

[Great improvements have been made in the construction of paddle wheels, so far as it relates to workmanship and the materials employed, if not in their form and operation. The steam engine itself, perhaps, varies as little as the paddle wheel, from the first one employed by Fulton.

Commissioner from Rhode Island.

Capt. C. F. Brown, of Warren, R. I., has been appointed, by Governor Hoppen, Commissioner to the Paris Exhibition for that State. This is a highly creditable appointment for Rhode Island. Capt. Brown is a noble representative of the American inventor. An experienced and intrepid commander at sea, he has devoted much attention in his retirement from naval life, to improvements in mechanics, and has secured a number of patents within a few years for various new and useful inventions.

Major Brown, formerly Superintendent of the New York and Erie railroad, was reported to be lying dangerously ill by the last news from Europe. He had been in Russia for the past five years, as Superintendent of the Russian railways, and had sought the air of Naples for his health.

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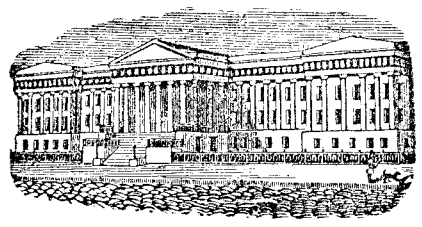

[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office.

FOR THE WEEK ENDING APRIL 18, 1855.

BLEACHING APPARATUS—Chas. T. Appleton, of Roxbury, Mass.: I claim the combination of an air-tight vat for receiving and retaining the goods, an apparatus for exhausting the air therefrom, and the necessary vessels containing the liquids used in the process of bleaching, whereby the various stops may be performed in a much shorter space of time than has heretofore been required, and without removing the goods from the vat, substantially as set forth.

SASH FASTENERS—W. E. Arnold, of Rochester, N. Y.: I claim the mode, substantially as set forth, of constructing and arranging a slide bolt and case, so as at pleasure to form either a right or left hand lock, the security also of said lock being attained by means substantially as described.

GAS RETORTS—H. P. M. Birkinbine, of Philadelphia, Pa.: I do not claim the D gas retort, nor the passing of gas through a second retort, or heater, nor a retort with a cellular shell, or exterior wall.

But I claim the D gas retort with the annular space above, as described, cast with and making a part of it as illustrated.

MACHINES FOR PUNCHING METAL—Marshall Barnett & Chas. Vander Woerd, of Boston, Mass.: We claim so combining the punching bar, with a vibrating lever at one end, and a cam at the other end of it, as that it shall always rise and fall in a plane parallel to the bed of the machine, substantially as described.

MELODEONS—Jeremiah Carhart, of New York City: I am aware that a similar arrangement of the reed has before been adopted, and the air forced upwards through it to produce the tone by the bellows from below, and the hammer caused to strike the reed from beneath, but this has only been done in instruments employing a forced current of air produced by the blowing action of the bellows, and the hammer has necessarily been arranged within the wind chest, between the said chest and reed, and intermediate of the current passing from the bellows to the reed, whereby much inconvenience arises in the removal of the hammer, and adjustment of the reed, and to remove the hammer destroys or stops the operation of the reed for tuning or playing, this I do not claim.

But I claim the arrangement shown and described, in instruments operated by exhaustion of the air, of the reeds, valves, and hammers, in relation to the exhausting bellows or passage, so that the hammer is caused to operate outside of the influence of the bellows, and not between the bellows and the reed, and whereby the hammer may be readily detached and taken out of the instrument for repair, tuning or adjustment of the reed, without destroying the capability of the reed to speak or play.

Without claiming the application of buffs consisting of strips of leather to musical instruments generally, or for any other purpose than that which I have specified, and claim their application to reed instruments in connection with hammers substantially as and for the purposes fully set forth.

[A description of this improvement in reed instruments may be found on another page.]

GRAIN AND GRASS HARVESTERS—Jarvis Case, of Springfield, Ohio: I claim placing the line shaft directly above the vertical center of the spur gear of the master wheel, in the manner and for the purpose described.

I claim the adjustable anti-friction wheel in combination with the spring, R, and adjustable set screws, r r, in the manner and for the purpose described.

EXPLOSIVE GAS ENGINES—Alfred Drake, of Philadelphia, Pa.: I do not wish to claim the employment or application of explosive admixtures of gases to engines.

But I claim, first, the ignitive apparatus composed of the thimble, s s' s'', and the interior tube or blow pipe, y y, arranged and operating substantially as described.

Second, the arrangement and combination of the hollow piston rod, piston, and jacket, surrounding the cylinder, for the purpose of maintaining a constant circulation of water for cooling, substantially as described.

LUBRICATING COMPOUNDS—Nathan Dresser, of Rochester, N. Y.: I claim the lubricating compound and its application to journals, cranks, axles, and other machinery, subject to friction, using for that purpose the aforesaid compound or any other substantially the same, and which will produce the intended effect.

GAS GENERATOR IN A PARLOR STOVE—S. B. Ellithorp, of Elmira, N. Y.: I do not claim the stove condenser, clarifier, or gasometer, these being all well known old devices.

But I claim the combination of the coal stove and retort, as fully described, thus combined making a portable coal gas generator for the purposes set forth.

SHIP'S WINDLASS—James Emerson, of Worcester, Mass.: I claim the combination of the geared sectors, I I, with pawls, J, attached, the part pinions, G G, levers, K, and pulleys, H, the above parts being constructed and arranged substantially as shown and for the purpose as set forth.

[See a description of this invention on another page.]

PROCESSES FOR MELTING SUGAR—C. W. Finzel, of Bristol, Eng Patented in England May 7, 1853: I claim the described improvement in refining sugars, that is to say, melting the raw sugar in a vacuum, preparatory to the further refining thereof in the manner, and for the purposes as set forth.

DREDGING MACHINES—C. H. Fonde, of Mobile, Ala.: I do not claim the excavating wheel with buckets across the periphery, nor the tilting tipper for discharging the same, nor the manner of applying power to the same, nor the raising and lowering of said wheel.

But I claim the device for keeping the wheel in gear while raising and lowering, and the combination of the radius bar and the sliding carriage which carries the shafts of the pinion, and also moves the water wheels which slide on the feathered shafts, as this device and this combination of well known mechanical devices is my own invention and has enabled me to keep the excavating wheel always in gear with the engine, and has never been so applied before.

I claim the self-acting latch, F, in its particular form and mode of adjustment, it being so shaped and adjusted as to hold on to the lid of the bucket until it is struck by the tipper, and so balanced that by its own gravity it will fall over and latch again before the bucket enters the water, this particular form and adjustment with the pin marked H, does away with the necessity of springs, and is the result of careful and expensive experiments.

I also claim that particular combination of chutes or sluice ways, G G, which form an apex under the discharging tipper and pass athwartship, on an incline towards the scows, which particular combination has enabled me to discharge an excavating wheel latterally on either or both sides.

GRAIN AND GRASS HARVESTERS—E. B. Forbush, of Buffalo, N. Y.: First, I claim the combination of the gear key, D, with the gearing, substantially as set forth.

Second, I claim the extension of the platform timber, S S, beyond the finger bar, so as to connect it to the main frame of the machine near the driving wheel, with the view of giving strength and stiffness to the platform, and bring its weight as much as possible, on the main frame near the driving wheel, substantially as set forth.

Third, I claim as improvements upon the clamp, the locks, n r s, substantially as described.

Fourth, I claim the improvement of the second angle, c r, in the brace bar of the guard finger, substantially as described.

MOLDS FOR CASTING PENCIL SHARPENERS—W. K. Foster, of Bangor, Me.: I claim the arrangement of the spring holder, G, sliding plates, J and I', in relation to the grooved core, D, and gauge, K, for the purpose of adjusting and holding of the blade, H, in the mold, and the forming of the slot in the pencil sharpeners, as set forth.

MACHINES FOR PUNCHING METAL—De Grasse Fowler & George Fowler, of Wallingford, Conn.: We claim the peculiar manner of connecting the operation of the two levers, n u k, to throw the machine out of gear at the time when the punch is at its greatest elevation, when constructed, arranged and made to operate substantially in the manner described.

FOR TURNING THE LEAVES OF MUSIC BOOKS—Isaac Gallup, of Mystic Bridge, Conn.: I do not claim the revolving self-adjusting pulleys or finger carriers.

But I claim, first, the employment and arrangement of the swinging bars, F F F F, and keys, G G G G, in combination with said revolving self-adjusting pulleys or finger carriers, D, substantially as and for the purpose set forth.

Second, the employment, substantially as shown, of the spring, I, in combination with the spring, H, for the purpose set forth.

Third, providing a stop, J, on each of the keys, G, and a spring catch, K, on the under side of the top, A', of the case, A, to fit against said stop, substantially as and for the purpose set forth.

Fourth, providing each of the fingers, C, with an extension, from a to b, for the purpose specified.

[A notice of this apparatus for turning music leaves may be found on another page.]

STUD AND BUTTON FASTENING—S. W. Hopkins, (assignor to W. C. Greene, J. T. Mauran, and Chas. Jackson,) of Providence, R. I.: I claim the construction of the fastening, as shown and described, viz., having the shank of the stud or button formed of a tube, B, which contains a spiral spring, b, and having a bar, c, fitted in slots, d, in the outer end of said tube, and between the outer end of the spiral spring, b, and a pin, a, attached to the outer end of the tube. The outer side of the bar, c, being provided with a recess, e, which, by means of the spring, b, is kept over the pin, a, and the bar, c, consequently secured in a transversed position with the tube, B.

[On another page a description of this improvement in studs and buttons may be found.]

ROTARY ENGINES—Abraham Masson, of Philadelphia, Pa.: I claim the combination of the four steam cylinders and pistons with the curved guide arranged and operating so as to produce a continuous rotary motion, in the manner and for the purpose substantially as described.

FOUNTAIN PEN—H. K. McClelland, of Eldersville, Pa.: I do not claim, separately, any of the described parts; but I claim the construction of the implement as shown and described, viz., having a bag or receptacle, B, placed within a tubular handle, A, the lower end of said bag having a tube, C, attached to it, which tube is provided with a valve, e, and button or spur, c, the tube, valve, and button or spur being enclosed by the pen holder, D, which contains a sponge, G, and is provided with openings or channels, j, through which the pen is supplied with ink as the valve, e, is operated as shown and described.

[In the next number a description of this pen will be published.]

HAY MAKING MACHINE—Francis Peabody, of Salem, Mass.: I claim, first, the described machine for making hay, consisting essentially of the rake for gathering the grass, in combination with the revolving scatterer, constructed and operating in the manner substantially as described.

Second, I claim revolving the scatterer in a direction contrary to that in which the machine moves, for the purpose set forth.

Third, I claim the employment of a single wheel to carry and actuate the hay makers when this wheel in the center of the machine, in the manner and for the purpose set forth.

SHUT-OFF VALVE GEAR—J. B. Schenck, of Ansonia, Ct.: I do not of themselves claim the employment of two cams or eccentrics applied to a single slide valve, the one to open the steam ports, and the other to close them to cut off the steam.

Neither do I claim making one of the said cams or eccentrics movable for the purpose of varying the cut off.

But I claim, first, connecting the slide valve with a lever, f, which is also connected at different points with two arms, e e', of unequal length, working side by side, and receiving motion, substantially as described, from separate cams on the crank shaft of the engine, or some other shaft having a corresponding motion therewith, the whole operating to give the valve a double movement, as set forth.

Second, effecting the connection between the finger wheel, O and the bevel wheel, n, or its equivalents through which the said finger wheel transmits the movements of the governor to the cut-off cam, B', by means of pawls, t t, acting upon ratchet teeth, u, and providing a stud or stop, v, on the opposite cam to that which carries the finger wheel for the purpose, when the cut-off cam arrives in position to give full steam for the whole stroke of the piston, of liberating the pawl by which the motion is transmitted in the direction for retarding the operation of the cut off cam, and thereby rendering it inoperative, substantially as described.

[This improvement in valve gear will be briefly described in next week's SCI. AM.]

HORSE POWERS—John Simpson, of Atlanta, Ga.; I do not claim a driving wheel without central shaft or bearings.

But I claim, first, the employment of the large or main vertical driving wheel without central bearings, in combination with the suspension band, in the manner and for the purposes set forth.

Second, I claim, in combination with the driving wheel, without central bearings, and the suspension band, the inner run, k, and the pulley, m, so arranged as to throw the foot of the driving wheel back, all in the manner set forth.

COMPENSATION BEARINGS—Lewis Smith, of Buffalo, N. Y.: I claim relieving bearings of machinery from undue pressure and consequent friction, by means of the different expansion of two or more different metals, the parts being constructed, combined, and operating substantially as set forth, or in any other manner substantially the same.

MAKING PRINTER'S INK—C. A. Thompson, of Adrian, Mich.: I claim the composition of oil varnish made in the manner set forth, to be mixed with rosin, soap, lamp black, &c., for printers' ink.

PEN HOLDER—W. H. Towers, of Philadelphia, Pa.: I claim the combination of the sponge with the lever and pen, arranged and operated in the manner and for the purpose described.

DIES FOR BOLT FORGING MACHINES—J. T. Willmarth, of Northbridge, Mass.: I claim the tapering conical dies, b b', constructed and operating in the manner described for the purpose set forth.

PAPER RULING MACHINE—T. J. Baldwin, of Bridgeport, Conn.: I claim lifting the pens, X, from the sheets of paper, a', at the proper intervals by means of the mechanism shown and described, viz., having the front edges of the sheds, a', as they move along on the endless apron, B, strike against a pendant, f, attached to a pulley, D', on a transverse shaft, N, on the frame, A, said shaft being provided with a pulley, O, at one end, having a recess or groove, e, cut in its periphery, and a cam, Q, the pulley, O, working on bearings on a pulley, M, underneath it, said pulley, M, being driven by a belt, d, from the driving shaft, c. The cam, Q, operating a lever, T, by which the spring clutch is allowed to act and connect the pulleys, K R, at one end of the drum, L, the projections, V, on the lower pulley, R, raising the pen stock so as to leave the blanks or spaces at the desired parts of the sheets, as set forth.

[To properly explain this invention, engravings are necessary; however, we will give a short description of it next week.]

PIANOFORTE ACTION—S. P. Brooks, of Suffolk, Mass.: I claim transferring the blow from the key lever to the hammer by means of the vertical bar, arranged and actuated substantially as described, whereby I am enabled to place the action below the level of the keys, as set forth.

I also claim attaching the damper arm to the vertical bar, in such a manner that the up-and-down movement of the said bar will alternately bring the damper against the string, and relieve it from the same, as set forth.

I also claim the means used for keeping the hammer close to the string, after the blow has been given, the same consisting of a but attached to a vertical bar, and actuated by the key lever, as described.

INDIA RUBBER SPRINGS—W. F. Converse, of Harrison, O.: I am aware springs of india rubber and other similar materials have been completely confined in cylindrical and other unyielding cases, such an arrangement therefore I do not claim.

But I claim the method of confining a cylindrical or prismatic block of india rubber at all points of its surface by means of a jointed or otherwise flexible cylindrical strap, connected to double levers or their equivalents, for applying the compressing strain convergently or radially upon the enclosed rubber.

I likewise claim in this connection adjustable end plates for securing the rubber from lateral expansion and for graduating the elastic force of the spring, if desired by means of screw nuts or equivalent devices, substantially as described.

ARRANGEMENT OF ROLLERS FOR MAKING METAL TUBES.—M. R. Griswold, of Watertown, Conn.: I claim the arrangement of the adjustable, smooth, or serrated rollers, whose axes cross each other, as set forth, with the guide plate and slides, and guide rollers for making seamless metal tubes, as described.

HAY PRESS—Pells Manny, of Waddams Grove, Ill.: I claim having the followers, G G, arranged or placed so as to cross or intersect each other at right angles and inclined, as described, and having the doors, H I, at each end of the box or case also inclined to correspond inversely with the followers for the purpose of having the hay compressed in the form of square bales, the line of pressure being diagonally through the bale, or the followers and doors exerting the pressure on the four sides of the bale, as shown and described, whereby little or no pressure is exerted against the sides of the box or case.

[A brief description of this press may be found on another page.]

GAS COOKING STOVES—Andrew Mayer, of Philadelphia, Pa.: I do not claim as new in stoves, separately considered, the several parts or devices specified.

But I claim the arrangement shown and described, of the gas lamps or burners with their overhanging perforated plates or openings, side apertures or passages for distribution of the heat oven, and hot air chambers or boxes situated at the sides of the oven within the body of the stove and provided with lids and slide valves, as set forth, and for the purposes specified.

[Gas being destined to take the precedent of other fuel in our cities, within a few years, good inventions of this kind, secured by patent, will eventually become valuable. See notice of Mr. Mayer's improvements on another page.]

SLIDE REST FOR LATHES—C. A. Noyes, of Pittsfield, Mass.: I claim constructing the slide rest, as shown, viz., having the top, H, of the sliding box, C, rest upon a shaft, I, and inclining or tilting said top by means of the screw, E, toothed wheel, F, pinions, L L G, screw rods, K K, and nuts, J J, substantially as shown, whereby the edge of the cutting tool which is secured on the upper surface of the top, H, may be raised or lowered, as desired, and presented in a proper position to the article to be turned.

[The nature of this invention will be described in next week's paper.]

LIFE PRESERVING DOORS—J. T. Pheatt, of Toledo, O.: I claim the arrangement shown and described of the inflatable water-proof coverings or bags on or over the panels and within or below the face level of the surrounding and intermediate framework of the paneled door or partition, as and for the purposes set forth.

[Another life preserver. See notice on another page.]

CULLIVATORS—John Stryker, of Six Mile Run, N. J.: I claim the application or use of front and rear supports or supporters, which not only answer all the purposes of wheels, but regulate and govern the action of the coulters in the ground, constructed and arranged substantially in the manner and for the purpose set forth.

GRAIN AND GRASS HARVESTERS—Philo Sylla, of Elgin, Ill.: I claim, first, hanging the sickle stock, G, to the ends of the levers, E and I, which carry it by means of the hinges, H and J, or their equivalents located at the diagonal corners of said stock, substantially as described for the purposes set forth.

ROTARY ENGINES—John J. Thomas, of Manayunk, Pa.: I claim, first, the attachment of a piston, D, to a disk which forms one side of the working cylinder or piston chamber, and works in contact with a bearing face, f, on the cylinder outside of the piston, and another face, g, inside of the piston, substantially as shown and described.

Second, constructing the engine, substantially as described with a central chamber, c, within or surrounded by the working cylinder or piston chamber, b, and with another chamber, m, on the opposite side of the disk, C, which carries the piston, and establishing communication between the chambers, b and c, by a recess, d, in the disk on one side of the piston, and between the chambers, b and m, by an opening through the disk on the other side of the piston, either of the said chambers, c or m, being the induction or suction chamber, and the other the eduction or discharge chamber, and the said chambers supplying the cylinder and receiving its discharged contents, as set forth.

[On another page may be found a short notice of this improvement.]

SLIDE REST FOR LATHES—Chester Van Horn, of Springfield, Mass.: I do not claim the carriage, B, nor any mode of operating the same; neither do I claim the transverse movement of the tool block, C, on the carriage, B, for these are common to most slide rests.

I claim forming the tool block, C, of two parts, c d, and connecting said parts together by a dovetail or its equivalent, so that the upper part, c, may slide or work on the lower part, d, the faces of the two parts, c d, that are connected, being oblique or inclined, as shown, and the part, c, being moved or operated by a screw, E, or its equivalent, for the purpose of elevating or depressing the tool, G, as described,

[A description of this slide rest will be published next week.]

METALLIC HONES—Wm. H. Webb, Jr., of Chelsea, Mass.: I claim a hone constructed with its sharpening surface composed of a combination of metals of different degrees of density, and arranged together substantially as specified. Not intending to claim the broad ground of constructing a hone of metal.

FURNACE FOR LOCOMOTIVES—O. W. Bayley, of Manchester, N. H., (assignor to Manchester Locomotive Works): I claim the within described arrangement of the compartments, F F, communicating with each other by the opening, H, and with the combustion chamber, K, by the openings, L L, whereby the unconsumed gases from the freshly fed fire are heated by passing over the whole length of the incandescent fire, and consumed in the chamber, K, in the manner substantially as set forth.

RAKES—Henry Chatfield, (assignor to Henry Chatfield and Theodore L. Snyder,) of Waterbury, Conn.: I claim constructing the teeth or tines of a rake or fork separately, with square or an equivalent form of apertures through the heads thereof, and uniting them by a single bolt, accurately fitting and passing through all the said apertures, and through a similar aperture in the shank of the instrument, the teeth or tines being kept at suitable distances apart by washers or blocks, placed upon the bolt between them, or by enlarging the heads thereof for the same purpose, the whole being secured firmly together by a nut screwed upon the end of the bolt, or in any other suitable manner.

FOLDING TOPS FOR CARRIAGES—William G. Foglesong, (assignor to Wm. G. Foglesong and Benjn. D. Anderson,) of Xenia, O.: I claim the application of a catch, a, as described, or its equivalent, in front of the hinge which unites the principal bow or slat iron to the stem, for the convenient stretching, &c., of a carriage or buggy top as explained.

PROPELLERS—William D. Jones, of Poughkeepsie, N. Y. (assignor to Henry Whinfield, of New York City): I claim the arrangement and combination of the parts forming a propeller, as fully set forth in the foregoing specification, for the purposes mentioned.

ELASTIC TUBE PUMP—Rufus Porter, of Washington, D. C., and Jonathan D. Bradley, of Brattleboro, Vt., (assignors to Jonathan D. Bradley, aforesaid, and George Dennison, of New York City): We claim, first, the mode of equalizing the resistance by a truncated cone of gradually diminishing thickness, by which the roller may leave the tube in combination with a lift, S, below, as specified.

Secondly, the relieving the spring of the tube, and the allowing the water to recede by means of jointed arms, eccentrics, or cams, as specified.

Thirdly, the mode of attaching the tube to the helical band by means of forming the latter in two parts, and by means of a band or molding on the former as specified for the purposes set forth.

[We are happy to see the name of our old friend Rufus Porter recorded once more among the successful applicants for patents. But where is the aerial steamship?]

SEWING MACHINES—E. Harry Smith, of New York City, (assignor to The Wheeler and Wilson Manufacturing Company, of Watertown, Conn.): I am aware that machines have been before constructed in which a rotary shuttle has been used, and also that a machine has been made which is the subject of a patent granted to Allen B. Wilson, and dated June 15th, 1852, in which a combination is used of a bobbin with a rotating hook, which operates upon the loop in such a manner as to throw it over the bobbin; but I would have it understood that I make no claim to any such rotating hook, or any rotary shuttle except that represented.

I therefore claim a discoidal shuttle having its bearings in its periphery, and revolving around its own axis when constructed substantially in the manner and of the form described.

And as a means of propelling the shuttle, I claim the employment of the lune form button constructed as described, which has a movement on its axis in the manner set forth, for the purpose of allowing the thread to slip alternately into and out of the concave in its periphery, and thus pass off the shuttle.

CAST IRON PAVEMENTS—George Neilson, (assignor to himself and Nehemiah Hunt,) of Boston, Mass.: I do not claim a pavement block of hexagonal form, nor with a perimeter formed by six hexagons disposed around a common or central hexagon, as shown.

But I claim making a paving block with a perimeter of thirty faces, arranged as shown in figure 1, and formed by sixteen hexagon or hexagonal prisms disposed with respect to one another as therein represented, the same enabling such a block, where it abuts against a contiguous block when laid in a pavement, to be supported laterally by a semi hexagonal projection and recess, as described.

ADDITIONAL IMPROVEMENTS.

SADDLE TREES—Wm. E. Jones, of the U. S. Army. Original patent dated June 23, 1854: I claim the combination with the hinged pommel and cantle of the self-adjusting side pieces for the purpose of preventing an unequal pressure upon the edges of the side pieces, howevermuch the saddle tree be expanded or contracted.

[The specifications and drawings of FIFTEEN of the patents in the above list were prepared at this office.]

To the Editor of the Scientific American.

SIR.—In your paper for March 31, I see that you have stated that a patent was issued to A. Bruer, of Mechanicsburg, Ill., for improvements in Corn Harvesters, which is a mistake, as it was issued to Gardner A. Bruce, and secured through your agency.

Respectfully, G. A. B.

Hotchkiss' Tramblock.

The *National Intelligencer* (Washington, D. C.) speaks in terms of the highest praise respecting the tramblock of Gideon Hotchkiss, of Windsor, Broome Co., N. Y., the well-known inventor of "Hotchkiss' water wheel." His tramblock is stated to adjust and set the foot of the spindle of the mill stone, with the most perfect accuracy. Out of ten large flouring mills in Georgetown, Alexandria, and the vicinity of Washington, nine have adopted it. It was on exhibition at the Fair of the Metropolitan Institute, in Washington, and met with the approbation of all the millers who saw it. Some of the largest millers in Western New York are also about adopting it—Angevine & Co., of Rochester, and L. A. Spaulding, of Lockport, being among the number.

To make perfect milling it is well known that the faces of the stones in grinding grain must be set relatively in distance to one another, with the utmost accuracy, or good work cannot be performed by them. This accuracy of setting the stones is stated to be perfectly accomplished by Mr. Hotchkiss' new tramblock.

Internal Transportation and Travel.

The Louisville *Journal* estimates the capital invested in canals, railroads, &c., at a thousand millions of dollars. It is divided thus:

Railroads and their machinery,	$600,000,000
Canals,	100,000,000
Steamboats,	70,000,000
Vessels in the coasting trade,	130,000,000
Turnpikes, stages, wagons, and canal boats	100,000,000
Total	$1,000,000,000

Inferior Gold Coins.

A correspondent writing to us from Lexington, Texas, says that merchants will not take the gold $50 pieces, U. S. coin, of 1852, for more than $49, and makes the inquiry, "are these pieces really worth no more?" "If so," he says, "Uncle Sam has practiced a fraud upon the people." He wants us to give him information on this subject, but really we cannot. The Superintendent of the Mint at Philadelphia is the proper person to afford such information, and as a matter of justice to the public ought to do it.

Crops in Tennessee.

The Franklin *Review* says, the wheat crop in that region of Tennessee is unusually promising, and the only danger now apprehended to it is, that it is growing so rapidly that the late frosts may injure it. If not, the crop promises to be a first rate one.

Stupendous Railroad Bridge.

A railroad bridge of monstrous dimensions has just been completed, over the main channel of the river, at Maumee. It is 780 feet in total length, and 55 feet in hight from the water level to the roadway. It is built on the "Howe-truss" principle, and contains 315,000 feet, board measure, of pine lumber, 40 tuns of wrought, and 30 tuns of cast iron.

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TO CORRESPONDENTS.

C. W. C., of Ind.—Faraday's *Chemical Manipulations* are good. It can be obtained of Appleton & Co., this city. But Graham's *Elements of Chemistry* is a most excellent work; it can be obtained, we suppose, from any respectable bookseller. Twenty cells of Groves' Battery will produce a fine light; forty cells a most brilliant one. A piece of burned chalk will answer for the Drummond light. Take a piece of clean hard charcoal and make it into a point.

R. F. C., of Ala.—Your model is completed, and the maker has made a very good job of it. On the receipt of the government fees, we will proceed to preparing the application.

J. W.. of Nova Scotia—The most simply-constructed excavator with which we are acquainted was patented by C. Williams last week. We are not informed whether he is ready to fill orders for machines, or not, but would recommend you to address him at Jackson, Tenn.

C. A., of Pa.—You have been rightly informed that there are no governors in general use on steam vessels, the reason for which is that there never has been one suited for the purpose, or at least successfully applied. You are right in supposing that the motion of the vessel renders the common governor inapplicable. It is not quick enough in its action, quickness being the greatest desideratum, for the reason that in a heavy sea, one or both wheels are one minute deep in the water, and the next almost or entirely out. A good marine governor is, as we have before said, very greatly needed.

G. B. A., of N. Y.—Copper kettles for boiling the clothes and cast-iron kettles for heating the water—just as you have them—are very good, if they are properly built up, and surrounded with brick; if not, they will consume a great deal of fuel. A very good portable steam apparatus for heating water with steam, used to be made by Mellen Battel, of Albany, N. Y.; they may be made there yet; we cannot tell you what is the best cooking range for one hundred people. The horse power of an engine is a very indefinite term: as the power is the steam, not the engine. The pressure of the steam on each square inch of piston, multiplied into its velocity per minute, divided by 33,000, will give the horse power. By using steam of different pressures the power of the engine must be in accordance with such pressure. One of Mr. Bogardus' Mills, we think, would answer for grinding your herbs; we do not think the rollers would answer.

H. A. H., of Ind.—An endless belt arranged as you propose, on the steam cutter, would perhaps answer very well, but it is a very old device, and you cannot patent the same.

B. S., of Mass.—Why do you ask us if it is practicable to use rosin fluid, instead of wood, in locomotives? It can be done, but the economy of its use is the grand question. India rubber has been used for door strips. The governor has been applied to windmills and water wheels, as well as steam engines.

J. T. H., of Md.—It will not be necessary to make a model of an entire melodeon: you need only show your improvements in such a way that their peculiarities may be readily comprehended.

W. S. E., of N. Y.—The only process known to us for bleaching ivory, such as the keys of pianofortes, is to wet them and expose them a number of times to the sun. You could not do this very well with a piano.

J. B. H., of R. I.—You have to study a great deal more than you have yet done to convince us that you can gain power by a lever. You must dive a little deeper into the subject.

R. R., of N. Y.—When you write again let it be in a clear, brief, and simple manner, and in a plain hand. We have no time to waste in deciphering hieroglyphics.

J. B. F., of Conn.—We give your request a candid consideration.

W. B., of Pa.—We answered you on page 247. The invention, we think, is patentable by the addition which you have thrown upon it in your last letter.

J. B. C., of Pa.—Your ash sifter device presents patentable features. Revolving screens for this purpose are not new. But your combination of the flanged dish for preventing the ashes from falling out when turned up vertically could be claimed, and perhaps some other part.

C. M., of Pa.—You can have dials made at almost any of the philosophical instrument makers. Eastman's gange is patented: we shall make your claim as broad as possible.

D. T. S.—The exterior of gravel wall houses are now ornamented by having designs cut in the mold boards, so that in building the gravel enters the designs, and when the boards are removed the figure remains on the building in relief. Pressing, as you propose, would be no better, while, we think it would add to the expense. You do not sufficiently state the advantages of pressing: if it is quicker, cheaper, and better, it would probably be patentable. A printing press with the form placed on a horizontally rotating bed, is very old: it never worked well.

F. D., of Fire Island—We think it will be cheaper to cut the grooves in the rifle barrel, than to obtain the spiral twist by inserting separate projecting bars. We believe, however, it is new and patentable.

I. & J. R., of Ind.—Property will not increase in value, you may depend, in the vicinity of gas works. We have never heard of gas works affecting the health of those in their vicinity one way or another. Gas works should be isolated from dwelling houses, and have a plentiful supply of water and good drainage.

J. R. A., Port Jervis—Your plan of conveying the milk from the pans to the churn, and of emptying the churn by means of a pump and flexible hose pipe is a useful one, but not patentable. Your method of raising water by the feet instead of by the hands, may also be good, for a change, but it is not patentable.

R. H., of N. Y.—The movement you propose to give the slide valve is a desirable one. Some valve motions have been constructed with a view to such a movement, but as they have not been generally adopted, must in some way have been defective: we cannot tell whether yours is new or patentable without a model or a sketch.

J. R. S., of N. Y.—We do not know of any tinsmiths guide. The expense of publishing 3000 copies of a work of 200 pages, in good style, would be about $1000. We do not know of a publisher who would buy your MSS.

M. B., of Pa.—Your letter of the 17th, covering $20 for engravings of the furnace, was duly received. The cuts are in progress of preparation, and will be published in their turn, probably in about three weeks.

G. & M., of Pa.—Your petition of withdrawal was sent to the Patent Office on the 21st. The Commissioner will send you the $20 by mail, addressed to Alleghany City, Pa.

D. G. G., of Ia.—The idea of a burglar's alarm with connections arranged for each door and window, is not new; but your peculiar plan of the alarm and connections strikes us as novel, and is probably patentable. The SCIENTIFIC AMERICAN is published at $2 a year.

A. F., of Mass.—Your marble polisher strikes us as new and patentable. If you desire to secure it by patent construct a model. We have sent a circular of information.

James Collins, of Conklin, N. Y.—Wishes to purchase several of the best dry clay brick presses which are in use, with a view of establishing a large business in brick making in Iowa. Manufacturers of such machines will do well to address Mr. C., setting forth the advantages of their different machines. But, gentlemen, a word of caution—don't exaggerate their merits too vividly.

T. B., of Mass.—A water-wheel or engine embracing the principles you describe is not new. The conversion of the same device into a steam engine which had been used for water, would be the mere substitution of our fluid for another, as a motive agent, and not patentable.

J. B. C., of Tenn.—You know it has been denied, that vultures sail so long without flapping their wings, as you have asserted. Until it is proven conclusively that they do fly as you state, what good will it do to discuss the question upon disputed premises: we will retain your communication until this point is settled; for it would only be a waste of room to publish until it was.

D. Z., of Pa.—It is impossible for us to say how long a boiler may be extended to get the most economy: we do not believe that long boilers are economical; we would prefer two boilers in preference to four, having the same heating surface.

J. G. D., of N. J.—We are glad to hear that you have made such an improvement on reapers and mowers.

L. W. P., of Ind.—The beautiful gloss on the shirts you purchase is due to the great pressure employed in the ironing process. Paper makers call it calendering, the gloss on printing paper being produced by passing the dry sheets through polished rollers. You can produce the same effect at home if you use a heavy hot flat iron, pressed hard, and rubbed rapidly over the garment.

A. P. B., of Ga.—We cannot tell you the cost of apparatus for making blacking; it cannot be much. You can commence with an iron kettle. We can furnish the receipts both for blacking and black varnish. You can purchase the materials at any druggists. Try some experiments on a small scale first, and then let us know what receipts you want.

M. P., of ——Whether intended or not, you have a very disagreeable way of expressing your opinions. You are aware that in your previous communication you gave the extract from Siliimam's Journal, and the views of Prof. A. John, to correct our opinions. In presenting them, you accepted their contradictions to correct us, without a single remark on the same. You do not seem to have given the subject sufficient attention, for what is not obvious to you, has been endorsed by excellent authority, see page 186, Vol. 8, SCI. AM. We had thought that the question was settled long ago, that the same bulk of vapor is produced from all liquids with the same expenditure of heat.

N. P., of N. Y.—None of the telegraph arrangements, Davy's or Morse's, use the local batteries, operated by breaking, but by closing the circuits. The wires being in the zinc in both sides, as stated, is also different from theirs. Your last letter explains the matter more fully, and points out its difference. If you can send a message twenty thousand miles as easy as fifty, and allow all way stations to write different messages, you have made a grand improvement.

H. S. B., of Onio.—Your's will meet with attention.

G. ——., of Washington—Your's is a very important inquiry, but you seem to forget that many persons are quite successful in ridding themselves of vermin by rat traps, there are also bug traps.

R. J., of Ky.—Latent heat is not a very proper term to use, because it is more liable to confuse than instruct, owing to the manner in which you have used the term.

J. D. B., of Ct.—A combined steam and ether engine was at work for some months in this city; it was a failure.

S. L., of Pa.—We will give receipts for coloring black on silk, cotton, and wool, in our series of articles on the Art of Dyeing.

R. O. K., of Ohio—If you compress steam of atmospheric pressure into the space it occupied as water, all its latent will become sensible heat. The heat of steam is not exactly latent when we view it in this light.

A. B., of Na.—We have not heard from you in a long time. Write soon.

J. McD., of Va.—Smoke may do very well for passing up the chimney, but not for propelling machinery.

Money received at the SCIENTIFIC AMERICAN **on account of Patent Office business for the week** ending Saturday, April 21:—

E. D. W., of Del., $60; G. W. M., of Mich., $30; F. C, L., of Pa., $30; M. B., of Ind., $17; J. S. M., of Ill., $25; F. W., of N. J., $30; W. H. M., of Cal., $35; E. R. N., of Pa., $30; C. F. B., of R. I., $60; T. E., of Pa., $55; M. C., of N. Y., $20; R. K., of N. Y., $30; E. W., of Mass., $25; H. I. B., of Pa., $25; M. B., of N. Y., $20; F. C., of N. H., $25; J. P. H., of O., $30; L. S., of N. Y., $20; H. W., of Wis., $35; G. T., of N. Y., $30; E. H. H., of Ind., $55; J. H. G., of O., $15; W. F., 2nd, of Mich., $10; W. T., of Tenn., $30; O. D B., of Mo., $10; D. L. B., of Miss., $20; L. B., of Ct., $30; P. G. G., of N. Y., $110.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, April 21:—

M. B., of Ind.; C. W., of N Y.; J. M. P., of N. Y.; L. Y., of N. Y.; M. B., of N. Y.; E. W., of Mass.; F. C., of N. H.; H. I. B., of Pa.; J. H. W., of N. J.; J. McM., of Ky.; J. H. G., of N. Y.; C. M. D., of N. Y.; E. R. N., of Pa.; E. W. G., of Mass.; C. & H., of O.; W. M., of N. Y.; S. H. M., of N. Y.; D. L. B., of Miss.; C. M., of Pa.; W. H. M., of Cal.

Important Items.

PATENT LAWS, AND GUIDE TO INVENTORS—Congress having adjourned without enacting any new laws pertaining to applications for patents, we have issued a new edition of the old laws, which may be had at our counter or sent by mail. This pamphlet contains not only the laws but all information touching the rules and regulations of the Patent Office Price 12½ cents per copy.

PATENT CLAIMS—Persons desiring the claim of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office, stating the name of the patentee, and enclosing $1 for fees for copying.

MODELS—We are receiving almost daily, models of inventions which have not the names of their inventors marked upon them. This usually prevents us from taking any notice of them whatever. We shall esteem it a great favor if inventors will always attach their names to such models as they send us. It will save us much trouble, and sometimes prevent the model from being mislaid.

RECEIPTS—When money is paid at the office for subscriptions a receipt for it will always be given, but when subscribers remit their money by mail, they may consider the arrival of the first paper a bona fide acknowledgement of the receipt of their funds.

BACK NUMBERS AND VOLUMES—We have the following numbers and volumes of the SCIENTIFIC AMERICAN, which we can supply at the annexed prices:—Of Volume 5, forty numbers; price in sheets, $1; bound, $1,75. Of Volume 6, all; price in sheets, $2; bound, $2,75. Of Volume 7, all; price in sheets, $2; bound, $2,75. Of Volume 8, none complete, but about 30 numbers in sheets, which will be sold at 50 cents per set. Of Volume 9, complete in sheets, $2; bound, $2,75. Of Vol. 10, all the back numbers, at the subscription price.

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IMPORTANT TO INVENTORS—MESSRS. MUNN & CO., 128 Fulton street, New York, Publishers and Proprietors of the SCIENTIFIC AMERICAN, having for many years been extensively engaged in procuring Letters Patents for new mechanical and chemical inventions, offer their services upon the most reasonable terms. Patents promptly secured in the United States, Great Britain, France, Belgium, Holland, Austria, Russia, Spain, and in all countries where they are granted. All business entrusted to their charge is strictly confidential. Private consultations respecting the patentability of inventions are held free of charge, with inventors, at their office, from 9 A. M., until 4 P. M. Parties residing at a distance are informed that it is generally unnecessary for them to incur the expense of attending in person, as all the steps necessary to secure a patent can be arranged by letter. A rough sketch and description of the improvement should be first forwarded, which we will examine and give an opinion as to patentability, without charge. Models and fees can be sent with safety from any part of the country by express. In this respect New York is more accessible than any other city in our country. Circulars of information will be sent free of postage to any one wishing to learn the preliminary steps towards making an application.

In addition to the advantages which the long experience and great success of our firm in obtaining patent present to inventors, they are informed that all inventions patented through our establishment, are noticed, *at the proper time*, in the SCIENTIFIC AMERICAN. This paper is read by not less than 100,000 persons every week and enjoys a very wide spread and substantial influence. Parties intrusting their business in our hands can rely upon prompt and faithful attention.—Most of the patents obtained by Americans in foreign countries are secured through us; while it is well known that a very large proportion of all the patents applied for in the U. S., go through our agency.

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T. R. RUSSELL, Manufacturer of Philosophical Apparatus and Inventors' Models, No. 7 Washington street, Salem, Mass. 33 12*

WARDWELL'S PATENT TENON MACHINE can be seen at the Scientific American Office this week. For further particulars address C. P. S. WARDWELL, Lake Village, N. H. 1*

JOHN PARSHLEY, NEW HAVEN, Conn. Manufacturer of Machinists Tools. Has on hand, and is finishing, all sizes of Engine and Hand Lathes, Iron Planers, Upright Drills, Bolt and Gear Cutters, Universal and Scroll Chucks of the best quality and latest style, at extremely low prices for approved paper, and still lower for cash.

N. B.—It is now admitted by all that New Haven is the best place to buy good machinists tools for 25 per cent less than any other place in the United States, as it was the first place and still is the only place where the tool business is pursued in a systematic way, which always gives good work and at a low price. And I know that I can sell (when quality and capacity is considered) ten or fifteen per cent. lower than any other tool builder in New Haven, as my business is large, and I make all of my own castings, and also 19-20ths of all the tool castings made in New Haven. Hence no one pretends to compete with me. Cuts of tools, with descriptions and prices, can be had by addressing as above. 33 tf

BLANCHARD'S PATENT SPOKE LATHES for sale by the manufacturer. Address HENRY SMITH, Dedham, Mass. 33 2*

A RARE CHANCE TO ENGAGE IN AN IRON Foundry and Steam Engine Manufactory, Davenport, Iowa.—I will sell the whole or the undivided half of the Leclaire Foundry, in Davenport, Iowa, with a complete set of Tools, Lathes, Drills, Planing Machines, Patterns for Saw and Flour Mills, Gearing, Steam Engines, Car Wheels, Iron Fronts, and almost every description of casting for which there is a demand in this country. This property will be sold low to a person who has the means and ability for conducting the business. Apply to GEORGE L. NICKOLLS, Land Agent, Davenport, Iowa, 1855. 33 2*

MACHINISTS TOOLS—SHRIVER & BROS., Cumberland, Maryland, have on hand finished Engine Lathes, 13 feet bed, swing 28 inches; 10 feet bed, swing 24 in.; 8 feet bed, swing 19 in.; 6 1-2 feet bed, swing 16 in. Also Power Planers, plane 9 1-2 feet by 33 inches, and 6 1-2 feet by 33 in., together with Drills, Hand Lathes, &c. 32 4*

FOR SALE—A complete set of foundry fixtures, a 30 horse power engine, two blowers, 3 feet diameter, 4 feet stroke, geared to the engine, a cast-iron cupola, 4 feet diameter with iron chimney, all new and of the best workmanship. The above will be sold for $1600, or parts in proportion, if applied for soon. R. E. SCHROEDER, Rochester, N. Y. 32 2*

A NOVELTY—A Writing Machine, by which, with common pens, ink, and paper, an original and one or more copies (either on single sheets or in a blank book,) can be written simultaneously. It is very simple in construction and works with all the freedom of a detached pen It fills a great desideratum, besides entirely superseding the copying-press. Every lawyer, copyist, merchant, business, and literary man should have one. It is equally useful for copying drawings, lace and calico patterns, and engravings on wood. The patentee offers rights for sale in such States and cities as still remain undisposed of. It is a fortune for the purchaser. For models prices, &c., write or apply to
31 4* D. SHEPHERD, Counsellor-at-law, No. 7 Wall st.

NEW HAVEN MFG. CO—Machinists' Tools. Iron Planers. Engine and Hand Lathes. Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These Tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices. Address, "New Haven Manufacturing Co." New Haven, Conn. 32tf

WANTED—A situation to take charge of a machine shop by a person who has much experience in draughting and building various kinds of machinery. Address X. Y., box 868, P. O., Detroit, Mich. 32 3*

POWER PLANERS—Persons wanting Iron Planers of superior workmanship, and that always give satisfaction, are recommended to the New Haven Manufacturing Co., New Haven, Ct. 31tf

MACHINISTS' TOOLS—Meriden Machine Co. have on hand, at their New York Office, 15 Gold st., a great variety of Machinists' Tools, Hand and Power Punching Presses, Forcing Pumps, Machine Belting, &c, all of the best quality. Factory West Meriden, Conn. 31 13*

TO LET—Light Rooms with steady power, on Canal, Elm, and Walker, streets, at very low rates. Situation central. Engine, buildings, and occupants first class. Facilities for exhibiting new machines, by Mr. GAUDU. 102 Walker st. 31 3m*

ANDREWS & JESUP—Commission Merchants, Cotton and Woolen Machinery, Steam Engines, Machinists Tools, Belting, &c., Importers and Dealers in Manufacturer's Articles, No. 67 Pine st., N. Y. 23 1y

IMPROVED PORTABLE CIRCULAR Saw-mills, —Manufactured by W. HERRICK, near the Depot, Northampton, Mass. N. B. Saw Mandrills, Saws, improved Saw-sets and Upsets furnished and warranted. Orders filled for any part of the United States. 27 10*

SMITH'S WATER-TUYERES—Prosser's Patent.—These Tuyeres are made of wrought-iron, and are warranted not to crack by the most intense heat. Also Water-backs and Tables, for kitchen ranges hotels, and restaurants, &c., requiring a constant supply of hot water. THOS. PROSSER & SON, 28 Platt st., New York. 27 tf

STAVE DRESSER AND JOINTER.—For tight work decidedly the best and cheapest in use. Machines can be seen in operation at SHAW & KIBBES, Shook Manufactory, Buffalo, N. Y., and models may be seen at the office of the agent, JAMES S. POLHEMUS, 117 Pearl street, New York, to whom, or to the patentees, H. & L. D. BENSON, Jackson, Susquehanna Co., Pa., any communications may be addressed. 27 13*

1855—WOODWORTH'S PATENT Planing, Tonguing and Grooving Machines—The subscriber is constantly manufacturing, and has now for sale the largest and best assortment of these unrivalled machines to be found in the United States. Prices from $85 to $1450. Rights for sale in all the unoccupied Towns in New York and Northern Pennsylvania, JOHN GIBSON, Planing Mills, Albany, N. Y. 29 9*

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STATIONARY STEAM ENGINES FOR SALE—Horizontal Engines with iron bed frames and Judson's Patent Valves, good, strong, substantial, plain finished, that will do good service, say from 4 horse power, $215, to 30 horse, $1,037. Pumps, Boilers, and fixtures can also be supplied when needed. Address,
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MACHINE GROUND CIRCULAR SAWS—(Patent applied for.) Mill men would do well to try these saws, they are perfectly free from thin or thick places, can be used thinner and with less sett, and run faster than any other hitherto made. All diameters and thicknesses warranted perfectly true. HENSHAW & CLEMSON, 31 Exchange street, Boston. 30 7*

IRON PLANERS—Of various sizes and superior workmanship on hand and finishing, for sale low for cash. We confine ourselves solely to building Planers, and can warrant every machine, Lathes, Drills, Gear Cutters, Chucks, &c., of the best quality furnished at very low prices. Address THOMPSON, SKINNER & CO., New Haven, Conn. 32tf

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NORCROSS ROTARY PLANING MACHINE—The Supreme Court of the U.S., at the Term of 1853 and 1854, having decided that the patent granted to Nicholas G. Norcross, of date Feb. 12, 1850, for a Rotary Planing Machine for Planing Boards and Planks, is not an infringement of the Woodworth Patent.

Rights to use N. G. Norcross's patented machine can be purchased on application to N. G. NORCROSS,
208 Broadway, New York.
Office for sale of rights at 208 Broadway, New York; Boston, 27 State street, and Lowell, Mass. 16 6m*

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VAIL'S CELEBRATED PORTABLE STEAM Engines and Saw Mills, Bogardus' Horsepowers, Smut Machines, Saw and Grist Mill Irons and Gearing, Saw Gummers, Ratchet Drills, &c. Orders for light and heavy forging and castings executed with dispatch.
8 1y* LOGAN VAIL & CO., 9 Gold st., N. Y.

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Science and Art.

Curious Essence.

A Perfume for the Handkerchief—Take half a pound of orris root; break it into small pieces; then place it in a quart bottle; now pour on the orris root one pint, either of the best pale unsweetened French brandy or of rectified spirits; let them stand together in a warm place for a week or ten days. The tincture of orris produced is now strained off, and to it the following ingredients are added:—Half an ounce of otto of bergamot, one drachm of otto of roses, half a drachm of otto of lavender, and a quarter of a drachm of otto of cloves. Allow the whole to remain together for an hour or so; then filter the perfume through blotting paper, to render it bright. A paper filter is easily made by folding a square piece of blotting paper from corner to corner, then opening the folds to pour the liquid in; a small jug makes a support for it.

To Preserve Steel Goods from Rusting—The simplest way of preventing the oxydation of polished iron and steel goods is to dust them over with quick-lime. Where the articles are required to be preserved for many months (such as polished steel grates,) strips of dry brown paper freely covered with powdered lime are to be wrapped round the bars; or they may be placed in cases, and the interstices filled up with quick-lime. Pianoforte wire and small goods are preserved in the same way. The *rationale* of the method is this—steel will not oxydize in *dry* air. The presence of quick-lime, from its hygrometric properties, secures dry air, and thus indirectly the lime preserves steel from rust. This is not a new plan, but is the method adopted by the majority of the Birmingham houses.

Another Way—Smear with strong mercury ointment. Wipe carefully before using.

Septimus Piesse.

London.

History of Reaping Machines.—No. 29.

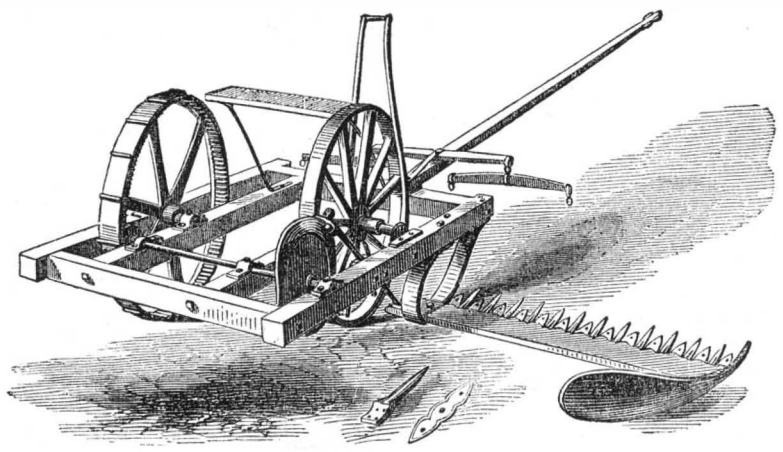
In our last, we mentioned only the date of one of Cyrenus Wheeler's patents, and omitted the other. Although it might make no great difference, seeing we referred to the published claim, still we have thought it best to give the date here. The patent was granted on the 6th of last February (claim page 182.) On the 13th of the same month, a patent was granted to Robt. J. Morrison, of Richmond, Va., (one half assigned to E. A. Morrison,) for constructing the cutter teeth and guards in three separate pieces of metal all of similar form, and lying closely upon one another, the middle row being stationary and sharpened, and the upper and lower ones are vibrated, (see claim page 190, Vol. 10, Sci. Am.)

The annexed engraving of a mowing machine is a perspective view, showing parts for which two patents have been granted to Fisk Russell, of Boston, Mass. One dated February 28th, embracing the following claim, the specified arrangement of the supporting wheel with respect to the main driving shaft, when only two wheels are employed to support the shaft—such arrangement consisting in placing the axis of the secondary supporting wheel aside of, and not in line with that of the primary wheel, and disposing the secondary wheel back of or on one side of the driving shaft, (see page 206.) The figure shows this improvement clearly.

On the 7th of last March, a patent was granted to John H. Manny, of Rockford, Ill., and H. Marcellus, of Amsterdam, N. Y., for auxiliary supporters to grass or stalks of grain, consisting of rods or wires on one side of the sickles, [see claims on page 214.] On the same page are the claims of three re-issued patents of J. H. Manny.

On the 21st of March following, the patent for the second improvement, represented in the annexed fig. 59, was granted to F. Russel, of Boston. The claims are, first, "arranging the secondary supporting wheel and the cutter frame in front of the driving shaft, when such driving shaft and the driving wheel are arranged and connected by gears, as specified, the same serving to lessen the side pressure on the horses. The gearing which operates the cutter bar is a cam wheel, the edge of which is fan-shaped, which plays between cheeks on the end of the connecting rod of the cutter bar, and thus gives it a reciprocating motion." Another claim embraces "the combination of two knives so that they shall project in different directions from one cutter bar, in order that either knives may be used in connection with the guard teeth, and either be made to serve as a lever to the other whenever circumstances may require." The figure shows a guard finger and knife, apart by themselves. Each knife is placed upon the guard bar independent moving on a center pivot by means of an iron rod passing under, and attached to the back end of the knives, giving them an

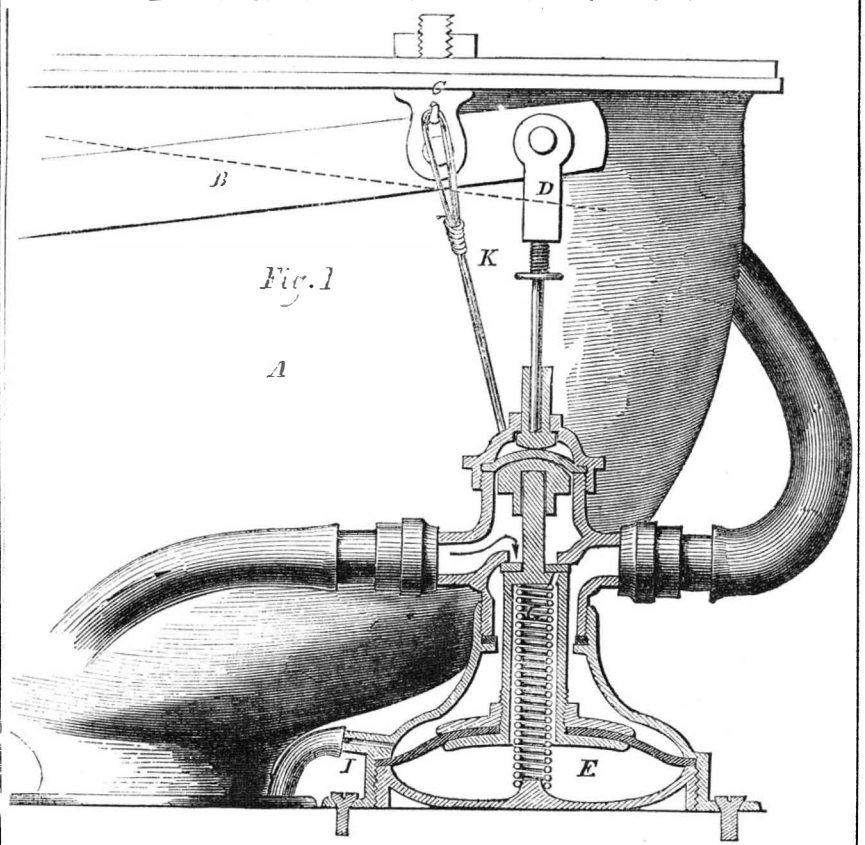
Figure 59.



oscillating motion, and making a drawing cut. Each knife has a cutting edge on both ends, so that the ends can be reversed when one edge becomes dull. This is like hanging a double set of knives. All this will easily be understood from the figure, [see claims on page 230.] On the same page are the claims of a patent granted to W. A. Wood, of Hoosick Falls, N. Y., on the same date. These embrace "making the inner face of the supporting wheel conical for clearing the track for the return swath;" also "forming a quadrangular space on the platform between the end of the cutting point and the frame of the machine sufficient to hold as much grain as will make a bundle before it is raked from the machine."

On the 28th of March last, a patent was granted to Andrew Dietz, and J. G. Dunham, of Raritan, N. J., for operating the cutters directly from the driving wheels by cams, which appears to be an important improvement in simplifying the machinery, [see claims on page 238.] On page 266 are the claims of the re-issued patent of Abner Whitely, of Springfield, Ohio.

BARTHOLOMEW'S PATENT VALVE.



The annexed figure represents an improved valve adapted to the purpose of a pan water closet or hopper, and which was patented by F. H. Bartholomew, of this city, June 20, 1854. The purpose of the invention is to obviate the necessity of the cistern, service box, ball, cock, crank, &c., saving the expense and space required, and making a more desirable arrangement, the whole being beneath the seat out of sight.

This valve is used with the common well-known pan closet, the only alteration being that the lever, B, must extend beyond the fulcrum about 1½ inches, to attach the stem, D, as shown. As represented in the figure, the valve is placed directly beneath the end of lever B, and secured to the trunk of the closet by wire K, so as to prevent it from being forced away from its place when the lever, B, is lifted. By lifting the lever knob the valve is opened, admitting a full flow of water directly from the Croton head, or other supply, to the basin, while the lever is suspended. Upon dropping the lever and closing the pan, the valve is still suspended open long enough to fill the pan full, avoiding the use of a service box in the air chamber for that purpose. The lower portion of the valve stem is cylindrical, connecting with the variable chamber, E, in which a spring, G, is confined, which holds the valve shut when not held open. This variable chamber (upon the lever being lifted,) discharges through the two outlets shown above G, the larger outlet (at the right of G) being closed by the rubber washer shown, when the chamber is discharged, and upon dropping the lever to close the pan, the valve is suspended from shutting until the chamber, E, can refill through the small opening at the left of G, thus allowing the pan to fill. The quantity of water for filling the pan is regulated by the stem screwed into D.

This valve, when required for the purpose of a hopper, is so made that the thimble on the top of the stem forms a valve, which is held upon the valve seat by the pressure upon the seat board, so that a limited quantity of water only is used. No concussion by the water is produced by this valve.

This valve is manufactured for the trade by the inventor, No. 84 Marion street, above Prince, New York, where more information may be obtained.

Gamboge.

Camboge or Gamboge, a gum resin, forming a well-known yellow water color. The best gamboge is from Siam and the kingdom of Camboja (whence its name,) and is said to be the produce of *Garcinia Cochinchinensis*, the broken leaves and branchlets of which form a yellow milky juice, which is run into bamboos, so as to form cylindrical sticks. Another kind, which is suffered to harden in masses, which are covered with leaves, is said to be derived from *Cambogia gutta*. The best gamboge is brittle and inodorous, of conchoidal fracture, orange-colored, or reddish yellow, smooth, and somewhat glistening. Its powder is bright yellow. It may be resolved into resin and gum by the successive action of ether and water. The finest gamboge contains about 70 per cent. of resin, sometimes termed *gambodic acid*, which forms numerous salts. Gamboge is used as a pigment, and in miniature painting; also to tinge gold varnish. In medicine it is used as a drastic purge. It is sometimes improperly used by confectioners to color liqueurs. An artificial gamboge, of very little value, is manufactured with turmeric and other materials.

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